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Univ. of Montana.
(Docs. Coll.)

SIXTH ANNUAL REPORT

OF THE

STATE BOARD OF EDUCATION

OF THE

STATE OF MONTANA.

TO HIS EXCELLENCY,

ROBERT B. SMITH,

GOVERNOR OF MONTANA.

JANUARY 1, 1899.

HELENA, MONTANA:
INDEPENDENT PUBLISHING CO
STATE PRINTERS AND BINDERS
1899

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AGRICULTURAL COLLEGE.

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State Board of Education.

EX-OFFICIO.

GOVERNOR ROBERT B. SMITH, President.
C. B. NOLAN, Attorney General.
E. A. CARLETON, Supt. Public Instruction, Secretary.

BY APPOINTMENT.

Henry R. Melton, Dillon	Term expires Feb. 1, 1901
M. J. Garrett, Lewistown	Term expires Feb. 1, 1901
O. P. Chisholm, Bozeman	Term expires Feb. 1, 1900
J. G. McKay, Butte	Term expires Feb. 1, 1900
J. E. Klock, Helena	Term expires Feb. 1, 1899
O. F. Goddard, Billings	Term expires Feb. 1, 1899
J. M. Hamilton, Missoula	Term expires Feb. 1, 1902
H. H. Grant, Grantsdale	Term expires Feb. 1, 1902

OFFICERS OF THE BOARD.

Robert B. Smith	President
J. M. Hamilton	Vice-President
T. E. Collins	Treasurer
E. A. Carleton	Secretary

SIXTH ANNUAL REPORT.

To His Excellency, Robert B. Smith, Governor of Montana.

Sir:—In compliance with law, we have the honor to submit herewith the Sixth Annual Report of this Board, showing the work of the Board for the year ending December 31, 1898.

The following regular meetings have been held: June 6, 1898; December 5, 1898.

Changes in Membership.—There has been but little change in the personnel of the membership of this Board since the last report. The following appointment was made by your excellency: The Hon. J. G. McKay, of Butte, was appointed to succeed the Hon. E. B. Howell, of Butte.

STATE AND LIFE DIPLOMAS.

Rules and Regulations of the State Board of Education Concerning the Granting of State and Life Diplomas.

The State Board of Education has thoroughly revised the rules relative to the issuance of state and life diplomas. It is the policy of this Board to make the standing for granting state and life diplomas as high as that of any leading educational state.

Subdivision 7th of section 1516 of the Political Code, provides that the State Board of Education shall have power to grant state diplomas, valid for six years, and life diplomas.

Section 1517 of said Code provides: State diplomas shall be issued to such persons as have a good moral character and who have held for one year and still hold in full force and effect a first grade county certificate, with the addition of English Literature and Mental Science, and who shall furnish satisfactory evidence of having been successfully engaged in teaching for at least five years. The term "five years" shall be construed to mean for five years of not less than seven months each, that is, the applicant must have taught a part of each year for five years, not necessarily consecutive years—and in all thirty-five months, of which at least twenty-one months must have been in the public schools of Montana; provided, that the State Board of Education shall have power to add such other studies to those enumerated in this section as they may deem necessary.

Life diplomas may be issued upon all and the same conditions as state diplomas, except that the applicant must pass a satisfactory examination upon the rudiments of botany, geology, political economy, zoology and general history, and must furnish satisfactory evidence of having been successfully engaged in teaching for at least ten years. "Ten years" shall be construed to mean ten years of not less than seven months each; that is, the applicant must have taught some part of each year for ten years—not necessarily consecutive years, and in all seventy months, of which at least twenty-one months must have been in the public schools of Montana.

Section 1519. A state or life diploma may be granted to any graduate of the State Normal School of Montana or of the State University of Montana, when the said graduate furnishes satisfactory evidence of having successfully taught, after graduating at a public school in this state for sixteen school months. State or life diplomas may be granted to graduates of other educational institutions, within or without the state, upon conditions established by the State Board of Education.

Section 1520. Any state or life diploma may be revoked by the State

Superintendent for incompetency or immoral conduct, but before any such revocation the holder shall be served with a written statement of the charges against him, and shall have an opportunity for defense before the State Board of Education.

Under the authority of the foregoing sections of the Political Code, the following rules and regulations are adopted relative to the issuance of state and life diplomas:

Rule 1.—That in all cases an affidavit of the applicant, or of some person known to said Board, will be required to be filed by the applicant with the Board, which affidavit must state the entire time which the applicant has taught, and also the length of time that he or she has taught in the State of Montana.

Rule 2.—That an applicant for a state or life diploma basing his application on a state or territorial certificate or diploma from any other state or territory shall file with the State Board of Education an affidavit enumerating the branches in which he has been examined in obtaining the certificate or diploma upon which his application is based unless these branches are enumerated in said certificate or diploma, and, where possible, give percentages obtained in the different branches; and that any applicant basing his application upon a diploma from any state normal school, or who is a graduate from the classical, scientific, philosophical or literary courses of any university, college or institution of learning whose requirements for entrance and graduation are equal to those of the University of Montana, which is legally authorized to issue diplomas, shall file with the Board an affidavit by said applicant in said school, with a statement of the length of time occupied in the completion of said course of study, together with standings as above; provided, that all applicants for state diplomas must file satisfactory evidence of having taught successfully thirty-five months, at least twenty-one of which must have been in the public schools of the State of Montana; provided, further, that all applicants for life diplomas must file satisfactory evidence of having taught successfully seventy months, at least twenty-one of which must have been in the public schools of this state; provided, further, that the foregoing shall not apply to graduates of the State University of Montana or the State Normal School of Montana.

Rule 3.—That persons holding Montana state diplomas may be granted life diplomas upon filing with the State Board of Education satisfactory evidence of having taught the time required by law for said life diploma, and upon passing a satisfactory examination in the branches enumerated for a life diploma.

Rule 4—That applicants for state and life diplomas basing their applications upon results of an examination, shall be required to attain an averoge of 90 per cent. in the branches required by law, but no applicant shall be entitled to receive such state or life diploma who shall fall below 75 per cent. in any one branch.

Rule 5.—That public examinations shall be held in June and December of each year, at the State capital, at such time and under such regulations as the Board may determine.

Rule 6.—That all applicants for examination for state or life diplomas will be required to pass a satisfactory examination in theory and practice of teaching, school laws of Montana and mental science.

Rule 7.—That applicants for state diplomas will be required to pass a satisfactory examination in the several branches of the following groups:

Group 1.—Mathematics: Arithmetic, elementary algebra through quadratics, plane geometry.

Group 2.—Language: Reading, writing, grammar.

Group 3.—Science: Political and physical geography, physiology, physics.

Group 4.—History and Literature: U. S. History, civil government—state and national—American Literature, English Literature.

Note.—In lieu of the examination in such of the above branches as are required in first grade county certificates, the applicant may request the county superintendent to forward his examination papers to the State Board of Education. Should the Board find that the papers indicate a sufficient degree of scholarship, they may, at their discretion, excuse the applicant from further examination in said branches.

Rule 8.—That in addition to the above, applicants for life diplomas will be required to pass a satisfactory examination in the branches specified in the following groups:

Group 5.—Mathematics: Advanced algebra through quadratics.

Group 6.—Rhetoric.

Group 7.—Botany, zoology, geology.

Group 8.—History and literature, general history, political economy.

Rule 9.—That all applicants for state and life diplomas shall be required to file with the State Board of Education a written statement from one or more superintendents or other experienced educators, certifying to the professional success and good moral character of the applicant.

(b) Written statements from school boards for whom the applicant has taught, certifying to his success in teaching and government.

(c) The names of three disinterested persons of liberal education as references.

Rule 10.—That upon the granting of a state or life diploma to any person the Clerk of the State Board of Education shall immediately notify each county superintendent of the name of the person to whom such diploma is granted and the date of granting the same.

Diplomas may also be granted to graduates of educational institutions within or without the state. Applicants from such institutions may, at the discretion of the Board, be required to pass an examination in theory and practice of teaching, and in one subject selected for him from any or each of groups 1, 2, 3 and 4. Such applicants may also be required to write a thesis of not less than two thousand words on some professional topic selected by the Board.

The possession of a life diploma from any other state may, at the discretion of the Board, be accepted in lieu of the examination in the academic studies. Such applicant, however, must comply with the other conditions laid down for graduates of institutions from other states; provided, that a state or life diploma may, by a vote of three-fourths of the members present, be granted to any applicant, regardless of the time he has taught in Montana, without examination, who is the holder of a state or life diploma issued in any other state or territory, and who furnishes satisfactory evidence of successful work in teaching.

Rule 11.—Graduates of educational institutions without the state who, by the laws of their state would be entitled to a state or life diploma after having successfully taught a certain length of time therein, and who, before receiving a diploma, engage in teaching in Montana, may be granted a state or life diploma, with or without examination, when said graduates shall have taught in or out of the state a sufficient length of time to entitle said graduates to a state or life diploma in the state wherein they graduaed.

Note.—In all cases applicants must send their diplomas and all other credentials, to entitle their applications to consideration, and the application must be sworn to or it will not be considered.

In all cases the application blank, when filled and sworn to, must be returned to this office in an envelope, and must not be put into the diploma package. Full letter postage must be paid on diplomas and all recommendations, if the same are sent by mail. To insure prompt reception of the same, all diplomas should be sent by express and the expressage, in all cases, prepaid.

During the year 1897 diplomas were issued by the Board as follows:

LIFE DIPLOMAS.

F. E. Green	Kalispell..
J. E. Klock	Helena.
H. A. Hull	Dillon.
Emily H. Priestly	Fort Benton.
Eliza Bond Stephens	Junction City.
Anna M. Sullivan	Butte.
B. T. Hathaway	Great Falls.
J. E. S. Bell	Butte.

STATE DIPLOMAS.

Daisy I. Blackstone	Helena.
E. O. Garrett	Red Lodge.
Elizabeth Peebles	Lewistown.
Jessie Benton Wolfe	Butte.

At the meeting of the Board June 6, 1898, the following persons were granted state and life diplomas without examination:

LIFE DIPLOMAS.

E. O. Marsh	Great Falls.
Harriet L. McCaskey	Butte.
Ida M. Robins	Butte.
Ada A. Ridge	Great Falls.
Mrs. Carrie L. Miller	Helena.
May Florence McBride	Missoula.
Jennie A. Fulton	Helena.

STATE DIPLOMA.

John A. Lowry	Rohner.

At the meeting of the Board December 6, 1898, the following persons were granted state and life diplomas without examination:

LIFE DIPLOMAS.

A. G. Sears	Neihart.
Malvina G. Grant	Helena.
B. C. Sloan	Townsend.
Lillian H. Gwynne	Great Falls.
Ada F. Madden	Butte.
Mary L. FitzGerald	Boulder.

STATE DIPLOMAS.

Helen M. Reynolds	Miles City.
Phoebe A. Comfort	Twin Bridges.
Catherine Harvey	Chinook.
Elizabeth Day	Chinook.
Chalmer Munday	Stuart.
Adelaide G. Chambers	Livingston.
Nora Maude Tinsley	Horr.
John D. Orr	Big Timber.
Kate E. VanEmon	Willis.
John F. Curran	Miles City.

INSTITUTE INSTRUCTORS' CERTIFICATES.

These have been issued as follows:

DECEMBER 7, 1896.

F. Adelaide Staves	Helena.

JUNE 7, 1897.

Lewis Terwilliger	Butte.	
A. J. Walrath	Bozeman.	(Left the profession.)
Cora A. Grantier	Butte.	
J. M. Lewis	Kalispell.	
N .C. Titus	Miles City.	

SEPTEMBER 7, 1897.

J. E. Klock	Helena.	
D. E. Sanders	Dillon.	
H. A. Hull	Dillon.	
Helen P. Clarke	Helena.	
J. M. Parrent	Lewistown.	
M. J. Garrett	Lewistown.	
E .O. Marsh	Great Falls.	(Left the state.t)
O. G. Shanklin	Bozeman.	
W. H. Johnson	Helena.	
A. W. Mell	Dillon.	(Left the state.)
Laura J. Miller	Dillon.	
Della J. Long	Dillon.	
J. E. Monroe	Dillon.	
F. L. Green	Kalispell.	(Left the state.)

The following licenses ,heretofore issued by this Board, having expired, they were, on September 7, 1898, ordered to be renewed for two years:

James Reid	Bozeman.	
C. W. Birchard	Twin Bridges.	
W. E. Harmon	Bozeman.	
A. C. Newell	Butte.	
J. M. Hamilton	Missoula.	
F. S. Monical	Livingston.	
F. W. McFarland	Chinook.	
H. E. Wolfe	Deer Lodge.	
C. M. Charles	Miles City.	(Left the state.)
E. O. Busenburg	Glendive.	
Mattie Livingstone	Anaconda.	

DECEMBER 6, 1897.

Frank B. Traphagen	Bozeman.
M. A. Stapleon	Anaconda.

The following licenses, heretofore issued by this Board and having expired, they were, on June 6, 1898, ordered to be renewed for two years:

Oscar J. Craig	Missoula.
Mrs. M. S. Cummings	Helena.
Mrs. Laura E. Howey	Helena.

The following institute licenses were issued December 6, 1898:

E. A. Steere	Kalispell.
C. T. Bramble	Helena.
John F. Curran	Miles City.
J. T. Troy	Fort Benton.
J. P. Hendricks	Butte.
J. M. Hamilton	Missoula.

ACCREDITED HIGH SCHOOLS.

At the meeting of the Board held December 6, 1897, a resolution was passed directing the diploma committee, in conjunction with the presidents of the State educational institutions, to meet at some place to be designated by the chairman of said committee and to adopt a uniform plan by which all applications of high schools for the accredited list shall be passed upon by said committee; provided, that said plan shall be submitted to the board and approved.

The resolution also authorized said joint committee to act upon the applications of a number of high schools for the accredited list.

Pursuant to said resolutions said joint committee met at the office of the Superintendent of Public Instruction and after carefully considering the matters submitted to it, prepared the following report, which was adopted by the board at the June meeting:

Helena, Montana, December 28, 1897.

To the State Board of Education:

We, your joint committee, duly appointed by this Board at the December meeting to formulate a uniform plan for accredited high schools, and for the further purpose of passing upon the application of a number of high schools, beg leave to submit the following report:

That, in pursuance of the resolution of this Board, said joint committee met at the office of the State Superintendent of Public Instruction on the 28th day of December, 1897; all the members of said joint committee were present. The following named principals of high schools and superintendents and educators were present in pursuance of the invitation of the committee: F. E. Green, of Kalispell; J. W. Johnston, of Billings; W. E. Harmon, of Bozeman; Ward Tower, of Bozeman; F. S. Monical, of Livingston, and N. C. Titus, of Miles City. Besides these there were present Professors Aber and Elrod of the State University, and a number of other educators of the state.

The committee organized by the selection of Dr. Reid as secretary. The president of the diploma committee acted as president of the joint committee. The above named principals of high schools and educators present addressed the committee respecting the matter of accredited high schools and a proper course of study therefor. The committee decided to recommend to this Board that the work of the eight grades, when arranged, shall be the standard for entrance to the high schools. The following is the outline of the work recommended by the committee, which shall be required of all accredited high schools:

MATHEMATICS.

Algebra through quadratics, which shall be equivalent to the work as outlined in Milne's High School or Wentworth's School Algebra, or text-books of similar grade.

Geometry, plane and solid, equivalent to work as outlined in Wentworth and text-books of similar grade.

The science of arithmetic shall be studied for one-half a year after the completion of the work in geometry.

ENGLISH.

As a part of the work in English, ten pieces of the following fifteen pieces of literature shall be selected for critical study, and ten of the following fifteen pieces shall be selected for reading, the work to be distributed throughout the entire high school course.

CRITICAL STUDY.

Julius Caesar.
Macbeth.
The Princess.
The Ancient Mariner.
The Vision of Sir Launfal.
The Sir Roger de Coverly Papers.
Burke's Speech on the Conciliation with America.
Paradise Lost.
The Flight of a Tartar Tribe.
Essays on Milton and Addison.
Evangeline.
Gray's Elegy in a Country Churchyard.
Il Pensoroso.
Ivanhoe.
The Vicar of Wakefield.

LIST FOR READING.

David Copperfield.
Vicar of Wakefield.
Last of the Mohicans.
Autocrat of the Breakfast Table.
First Bunker Hill Oration.
Life of Samuel Johnson.
Sketch Book.
Gulliver's Travels.
Pope's Iliad, Books I, VI and XXII.
Prisoner of Chillon.
Marmion.
Franklin's Autobbiography.

Courtship of Miles Standish.
Enoch Arden.
Heroes and Hero Worship.

GRAMMAR, COMPOSITION AND RHETORIC.

Grammar and the fundamental principles of practical composition and rhetoric, with illustrative exercises and essays, shall be required for the first two years of the course.

LITERATURE.

One year of literature shall follow the work in rhetoric, which shall give a general knowledge of the life and growth of the English language and literature.

SCIENCE.

CHEMISTRY AND BIOLOGY.

Either one year in chemistry, or one year in biology, shall be required. One year in physics shall be required, following chemistry or biology. In all science work, one-half the time shall be devoted to laboratory work.

GENERAL HISTORY.

General history shall be studied for one year, the work to be confined to Grecian, Roman and English history.

UNITED STATES HISTORY AND CIVICS.

The last half year of the high school course, U. S. history and civics shall be studied.

LATIN.

Latin shall be required as follows: Grammatical prose composition, four books of Ceasar and four books of Cicero.

MODERN LANGUAGES.

Two years' work in modern languages, other than English, shall be accepted in lieu of the work in Latin for admission to any course except the classical.

Under the resolutions of this Board, the joint committee passed upon the applications of the following high schools: The Kalispell High School, Bozeman High School, and Miles City High School were placed upon the accredited list. The applications of the Livingston and Billings High Schools were denied for the reason that the equipment of the laboratories is not sufficient to give the instruction as required by the course of study outlined by the committee.

The joint committee have given the subject of accredited high schools a most thorough and careful investigation, and we believe that the foregoing plan, as outlined, will result in more efficient work in all high schools.

Respectfully submitted,

J. M. HAMILTON,
J. E. KLOCK,
OSCAR J. CRAIG,
D. E. SANDERS,
Members of the Committee.

E. A. CARLETON, Chairman.
JAMES REID, Secretary.

The following are the accredited high schools of the state.

Helena.
Butte.
Great Falls.
Anaconda.
Missoula.
Dillon.
Kalispell.
Bozeman.
Miles City.

ORGANIZATION OF FACULTIES OF STATE INSTITUTIONS.

At the meeting held last December President Reid, Dr. Craig and Judge Melton were appointed a special committee to prepare a report defining the status of all educational employees of state educational institutions in relation to their rights and privileges in faculty meetings. The committee submitted the following report, which was adopted:

Helena, Montana, December 5, 1898.

To the State Board of Education, Helena, Montana.

Gentlemen:—Your committee appointed to suggest a plan of organization for the faculties of the state educational institutions respectfully recommend:

That there be three grades of rank in the several faculties: professor, instructor and assistant.

That professors and instructors be heads of departments and have a vote in the general faculty meeting.

That assistants be under their respective heads of departments and have no vote in the meeting of the general faculty, but may attend faculty meetings.

Respectfully submitted,

OSCAR J. CRAIG.
JAMES REID.
HENRY R. MELTON.

STATE EDUCATIONAL INSTITUTIONS.

Appended to this report will be found the reports of the state educational institutions. As these reports are very full and complete it is unnecessary to here make any extended comment. It is very gratifying to note the steady growth of our state schools. Under wise and able management, they have become a source of great pride to the state. The number of pupils is steadily increasing, new departments have been added, till now every reasonable opportunity is afforded our youth for acquiring a college education at home, and without incurring the great expense of obtaining it in some eastern institution.

SCHOOL OF MINES.

The School of Mines, we regret to say, has not yet been opened. Unfortunately, there has been wanting the necessary funds with which to open and maintain it.

The value of such a school all concede, and it is to be hoped that the Sixth Legislative Assembly will be able to provide the means necessary to insure the opening of the school by next September.

Examinations.

Questions prepared by the diploma committee of the State Board of Education, December 30-31, 1898.

GENERAL HISTORY.

1. Name and describe the races of mankind. What is your basis of classification?

2. Contrast Buddhism and Brahmanism, showing resemblances and differences.

3. Show the effect of climatic and geographical surroundings on the civilization of Egypt.

4. Compare the development of the political organizations of Greece with that of Rome, showing especially wherein they differed.

5. For what are we indebted to the Greeks? To the Romans? To the Hebrews? Explain each point fully.

6. Describe the origin and development of Mohammedism. What are its essential features?

7. Discuss the Treaty of Westphalia; give its provisions and point out the results that have followed.

8. Give a brief statement of the causes, events and results of the French revolution.

9. Describe the English Constitution.

10. Give a brief account of the following persons: Pericles, Charlemagne, Aristotle, Nero, Garibaldi.

ZOOLOGY.

1. Define each term as used in zoology, larvae, metamorphosis, mammal, polyp, gill.

2. Give the history of the horse, as revealed through fossils.

3. Describe an "insect." Name some of the orders, and an example in each.

4. Give the "life history" of any one of the following: tape worm, crayfish, grasshopper, sponge.

5. Draw a clam, mouth and one valve of shell removed, and name all the parts that would be visible.

6. Give some of the ways in which insects are beneficial to man, and name some such insects.

7. Distinguish scientifically between vertebrate and invertebrate.

8. What points are taken into consideration in the classification of animals? Distinguish between order, family, genus, species.

9. Give the "branches" or "phyla" of the animal kingdom, and an example of each.

10. What points of resemblance and difference between Reptilia and Aves? What does the study of fossils show, as to the ancestry of these two branches of animals?

PSYCHOLOGY.

1. Briefly show that a scientific knowledge of child psychology from a physical point of view is an essential element in the preparation for teaching.

2. "When nerve cells have been exercised but not over-fatigued, they are in the very best condition for receiving fresh nutriment." Make a practical application of the foregoing statement with reference to a choice of subjects for elementary instruction.

3. Give the theory of the growth and development of nerve cells.

4. Discuss from a psychological point of view the nascent period for instruction in each of the following subjects: Language, drawing, music, nature studies and manual training.

5. Show the necessity for sense training in education.

6. "Education should consist in doing." Give a psychological interpretation to the foregoing statement and illustrate fully.

7 and 8. Name five psychological principles which have influenced your methods in teaching. How? Why? Explain fully.

9. Psychologists have distinguished at least four different types of mind according as the images arising from one or the other of the four senses predominate in imagination. Apply the foregoing to methods of teaching.

10. Fully illustrate the meaning of each of the following terms: Noumena, abstraction, ego, enthymene, ganglion, sensorium, reflex action, automatic action.

PEDAGOGY.

Outline your educational creed with respect to the following propositions: (a) True education. (b) The development of the intellectual faculties. (c) The best educational means to be found to give culture to every capability of the mind. (d) The order to be followed in study. (e) Methods of teaching.

(6) "In acquiring knowledge the mind first distributes its objects in kind, then in quantity and afterwards in their relations." Make a practical application of the foregoing to public school work.

(7) Distinguish between induction and deduction; analysis and synthesis.

(8) Contrast formal and informal instruction.

(9) Show the design of object lessons in elementary instruction.

(10) mention some of the dangers to which the object lesson system is exposed.

ENGLISH LITERATURE.

1. Give the characteristics and name of the chief writers of the age of Queen Anne, or Classical Age.

2. Contrast the style of Joseph Addison and Samuel Johnson.

3. Write a short review of the Cotter's Saturday Night.

4. Sketch briefly any one of the following characters: (1) Jeanie Dean, (2) Meg Merrilees, (3) Rob Roy MacGregor, (4)Edie Ochiltree, (5) Roderic Dhu.

5. Show how Paradise Lost reflects the prevailing religious views of the time of its author.

6. What is Shakespeare's place in English literature? What characteristics of his writings give him this place;

7. Name and classify ten great authors of the Victorian Age. Name a work of each.

8. Characterize George Eliot as a novelist.

9. Discuss the subject matter and style of Byron's Childe Harold.

10. Who wrote (1) A Princess of Thule, (2) The Christian, (3) Lorna Doone, (4) Jane Eyre, (5) Hypatia, (6) The Prisoner of Zenda, (7) Sir George Tressady, (8) She Stoops to Conquer, (9) Thaddeus of Warsaw, (10) Heroes and Hero Worship?

AMERICAN LITERATURE.

1. Contrast the style of Irving with that of Cooper.

2. Classsify the principal works of O. W. Holmes.

3. Write a short connected account of the life and literary works of John G. Whittier.

4. Sketch briefly any one of the following characters: (a) Evangeline, (b) Rip Van Winkle, (c) Hepzibah Pincheon.

5. Give an account of the Brook Farm Experiment, its object, promoters, and results.

6. Write a short, concise book review of any one of Hawthorne's short stories.

7. What was the influence of Emerson upon American life?

8. From what source did Bryant draw the subjects of his poems? From what standpoint did he treat them?

9. Tell the legend upon which Lowell bases the Vision of Sir Launfal. Apply the allegory.

10. Who wrote (1) Old Creole Days, (2) The Luck of Roaring Camp, (3) My Summer in a Garden, (4) Cudjo's Cave, (5) Oregon Trail, (6) Man Without a Country, (7) Bitter Sweet, (8) Prince of India, (9) Farm Legends, (10) The American Flag?

ALGEBRA.

1. Define and illustrate algebraic expression. (b) Interpret in ordinary language $a^2+3\sqrt{a^2-x^2}$

2. Define and illustrate monomial, polynomial, binomial, trinomial.

3. Find the value of the following: $\frac{x}{x+1}-\frac{x}{1-x}+\frac{x^2}{x^2-1}$

4. Define an equation and give the principles governing it.

5. Solve: $4+10x+5-6x\left(\frac{1}{x}-\frac{1}{3}\right)=27.$

6. A man bought a certain number of apples at the rate of 4 for 5 cents

and sold them at the rate of 3 for 4 cents. He gained 60 cents. How many did he buy? Give analysis.

7. What is a quadratic equation? Illustrate.

8. A rectangular park, 60 rods long and 40 rods wide, is surrounded by a street of uniform width, containing 1344 square rods. How wide is the street?

9. Solve the equation: $y\sqrt{x}+\sqrt{y}=21$

$$xy^2+y=333$$

10. Find two numbers such that their sum, their product, and the difference of their squares may be all equal to one another.

PHYSICAL GEOGRAPHY.

1. Discuss the causes and effects of oceanic currents.

2. What are the causes of land and sea breezes? Account for the chinook winds.

3. How is the temperature affected by the topography of the country? Where would you find the greatest and lease range of temperature between day and night and between summer and winter? Explain.

4. Give causes for variation of rainfall in different parts of the United States.

5. Account for the variation in plant life and in animal life on the land.

6. How are glaciers formed? Describe their movements.

7. What are the causes of the trade and anti-trade winds? What is the doldrum belt? Why does it change its position?

8. What is the probable causes of geysers? Where are they found?

9. What are the principal topographic features of the United States?

10. To what extent would you employ the laboratory method in teaching physical geography?

GEOMETRY.

1. Define acute angle, scalene triangle, sector, polygon.

2. State and demonstrate a theorum regarding the segments of one side of a triangle made by the bisector of the opposite angle.

3. Complete and demonstrate the following theorum: In any triangle the square of a side opposite an acute angle is equal to——————

4. Show how to construct a triangle when its three sides are given.

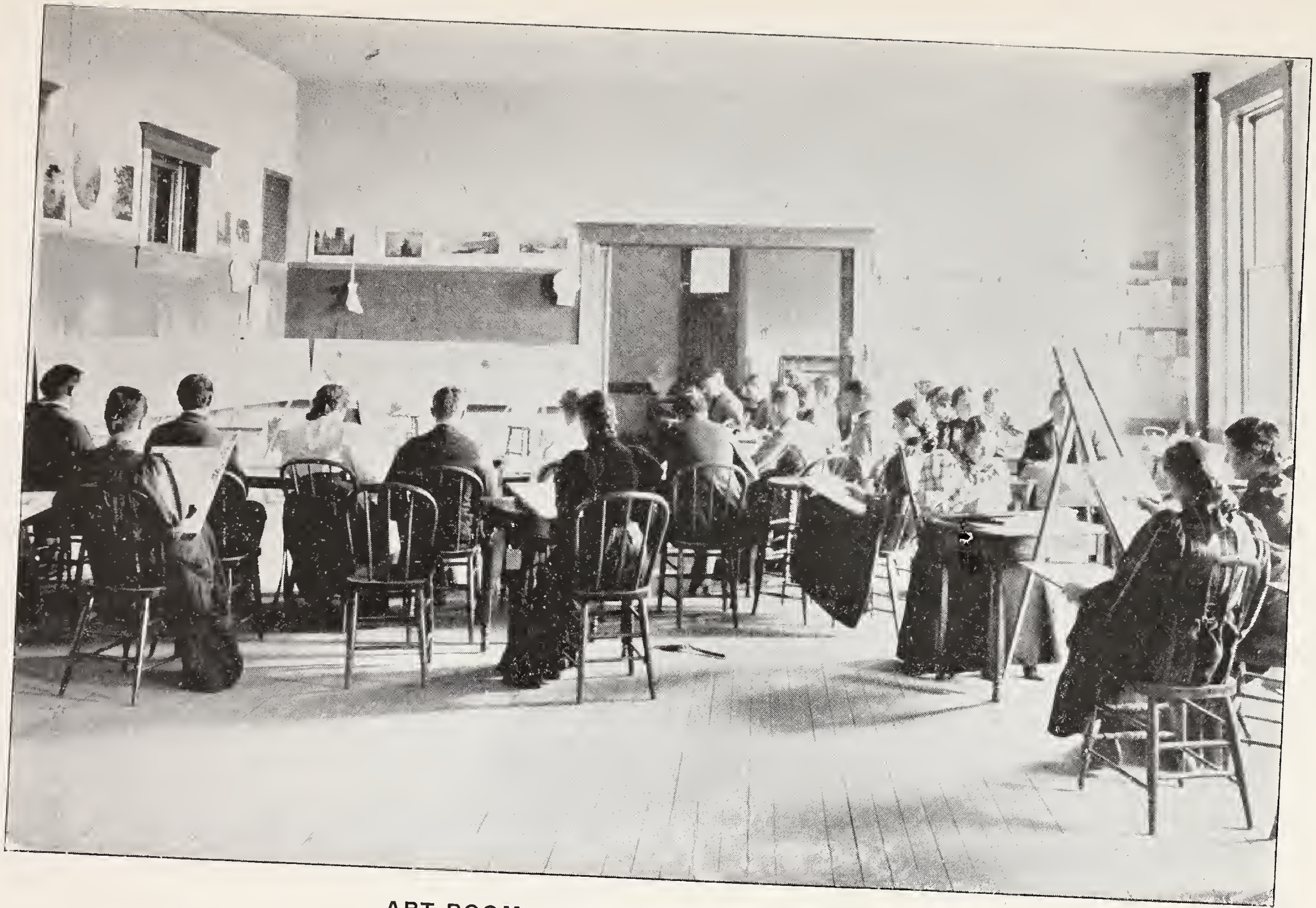
5. Find the area of a triangle each of whole sides is 12 feet.

6. Show how to construct a triangle equal in area to any given polygon.

7-8. Prove that the side of a regular hexagon is equal to the radius of the circumscribed circle.

POLITICAL ECONOMY.

1. What is meant by "expansion," as the term is being used?
2. State arguments in favor of it.
3. State arguments against it.
4. What is wealth?
5. What is meant by "the concert of the powers"?
6. What is meant by the balance of power?



ART ROOM, AGRICULTURAL BUILDING.

7. Explain what is meant by the balance of trade being in our favor.

8. Explain the law of supply and demand.

CIVIL GOVERNMENT.

1. Classify the principal forms of government, and give the leading features of each.

2. What is naturalization? Describe the process by which it is secured in the state of Montana.

3. How are laws made in this state? (b) what instrument contains the highest law in Montana?

4. What is the cost of maintaining the state government? (b) What are some of the principal items of expense?

5. Distinguish between direct and indirect tax.

6. What is a suit in court?

7. Describe the various steps taken from the beginning to the close of a suit.

8. State fully the powers and duties of school trustees; of teachers.

9. How are public schools maintained in this state?

10. What are the legal qualifications for teachers in Montana?

PHYSICS.

1. What is the total pressure in grains on the sides and bottom of a vessel filled with water, the dimensions of the sides being 50 and 75 centimeters and the depth 30 centimeters?

2. State Mariotte's law. Explain the construction and use of the barometer.

3. A ball has two forces acting on it at right angles to each other. One force will move it 5 feet and the other 10 feet in one second. What would be its position and how far would it have moved at the end of two seconds?

4. Explain the difference between temperature and quality of heat. How many kilograms of ice at 0° centigrade will be just melted by 140 kilograms of water at 95° centigrade?

5. Explain what takes place when light passes obliquely from a rare to a dense medium. What is total reflection?

6. Rays of light reflected from an object pass through a convex lens. Show by a diagram the position of the image.

7. A given body weighs 1,200 in air, and 1,035 in water. What is its specific gravity? Explain the principal involved in determining specific gravity.

8. How is sound transmitted? What is pitch? Upon what does it depend? What is resonance?

9. What kinds of electrification are there? Explain the principle of the electrophorus. What is meant by the terms conductor and nonconductor?

10. What are the laws of resistance in conductors? What is the strength of current produced by 8 Grenet cells arranged in series? The electromotive force of each cell is 2 volts and the internal resistance one-half ohm. The external resistance of the circuit is 3 ohms.

GEOLOGY.

1. Describe the formation of deltas. What relation do they bear to erosion?
2. To what extent do atmospheric agencies affect erosion.
3. Discuss briefly the origin and structure of mountains.
4. What are metamorphic rocks and how are they formed? How are faults and fissures produced?
5. What are the conditions necessary for coral growth? What are dikes? Distinguish between dikes and veins.
6. What kinds of life existed on the earth during the Silurian period? Describe briefly the life of the carboniferous period.
7. How is consolidation produced in sedimentary rocks? In what position were sedimentary rocks originally laid down?
8. Define the following terms: dip, strike, syncline and anticline.
9. In what way have veins been filled with metallic ores?
10. Into what classes are igneous rocks divided? What is the basis of this classification?

Respectfully submitted,

ROBERT B. SMITH.
C. B. NOLAN.
E. A. CARLETON.
HENRY R. MELTON.
M. J. GARRETT.
O. P. CHISHOLM.
J. G. McKAY.
J. E. KLOCK.
O. F. GODDARD.
J. M. HAMILTON.
H. H. GRANT.

SARA B. MACLAY,
Clerk of Board.

REPORT OF THE
COLLEGE OF AGRICULTURE
AND MECHANICS ARTS.

College of Agriculture and Mechanics Arts.

Bozeman, Montana, December 1, 1898.

To the State Board of Education.

Gentlemen:—I have the honor to present herewith my third biennial report of the State College of Agriculture and Mechanic Arts.

During nearly five years, as is well known to you, the work of the college was carried on in temporary quarters in various parts of the city. Notwithstanding the many disadvantages and difficulties incident to such a condition of affairs, the attendance has increased from year to year and the character of the work has improved in every respect. The following is a tabulated statement showing the increase in the faculty and students during the history of the college. A preliminary term of the college was opened on April 17, 1893, and continued for ten weeks.

Year.	No. of Faculty.	No. of Students.
1893	2	8
1893-94	8	139
1894-95	14	148
1895-96	13	165
1896-97	16	174
1897-98	18	201
1898-99	20	216*

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*Enrolled up to date.

This shows an increase from year to year which is very encouraging. We moved into the new buildings on the 1st of April, 1898, before the rooms were completely furnished. Owing to existing conditions, we have not been able to secure a sufficient supply of city water and the buildings are entirely without fire protection. There were not sufficient funds to complete the lighting of the buildings, but the gas-pipe and electric wires have been laid throughout so that when the fixtures are put on the buildings may be lighted with either gas or electricity. We have installed a gasoline plant for lighting and for a supply for the chemical laboratory, and dynamos will be placed to run the incandescent lights.

The following is a more or less detailed description of the new buildings:

The main building, situated in the center of the college campus, is a substantial structure of brick and stone, of practically fireproof construction, having a total length of 128 feet and a width of 90 feet. It is three stories high, and has a large, well lighted basement, which furnishes quarters for the domestic science department and three class rooms. The first floor contains the library, four offices and three large class rooms. The north half of the second floor is devoted to the art department, the arrangement being such that the three large rooms can be thrown together, by sliding doors, for exhibition purposes. The south half of this floor is fitted up entirely for the use of the business department, the arrangement being that of the best business colleges. The third floor contains the large assembly room, a draughting room and six laboratory and music rooms. The building is well lighted and commands a magnificent view of the Bridger and Gallatin mountains, and the whole of the beautiful Gallatin valley. All the laboratories and offices are furnished with gas, and the whole building will be lighted with electricity from our experimental plant in the engineering laboratory.

The Chemical and Physical Laboratory is west of the main building, 60x90 feet in dimensions. It is built of pressed brick and has two observatory towers, one at each end, and is three stories high, including the basement.

There are two entrances, one at the north end, the other at the south. A very large stack containing flues for ventilation of the hoods and furnaces passes up through the center of the building.

The basement is occupied by the laboratory of advanced physics, with desks for twelve students, and the assay laboratory arranged for eight students. In addition to these there are rooms for the preparation of samples for analytical work, with power crushing and gringing machinery. A large room is also available for a museum.

The main floor is occupied by the office and library, a lecture room to accommodate one hundred students, a preparation room, a small class room, and the Experiment Station laboratory.

The second story contains the laboratory for elementary physics, with sufficient capacity for forty-eight students, the laboratory for physical measurements for twenty-four students, the qualitative laboratory for twenty students, the quantitative laboratory for twelve students, and the mineralogical laboratory for twelve students. The instructor's laboratory is so situated as to give him oversight of all the laboratories, and renders it easy for a student to consult with him at any time.

The north tower is used for a meteorological observatory, and a fine set of registering instruments is installed in it.

The Shop Building is a one-story frame structure, 60x100 feet, situated back of the main building, and contains a machine shop 44x72, a forge shop 27x30 feet, office, tool room, wash room, engine and blower room, and boiler room. The large blower which ventilates the main and chemical buildings is located here, and is connected with those buildings by underground ducts.

The Engineering Laboratory is a two-story stone building 33x52 feet, located 260 feet east of the shop building, and receives its steam supply from the main boiler through underground piping.

The Drill Hall is a one-story frame structure 60x100 feet, situated between the chemical building and the experiment station, and is designed especially for military and athletic purposes.

The Experiment Station building is brick veneered, two stories high, with a large basement, and is situated on the west side of the campus, adjoining the experiment farm. It has sixteen rooms, and contains the biological laboratories, the offices of the director and the assistant agriculturist, and rooms for the director's residence.

EQUIPMENT.

The chemical lecture room is equipped with a portelumiere for use in experiments requiring projection. When cloudy weather interferes with the use of the porte-lumiere, the electric arc lamp or the oxyhydrogen lantern may be used for projection, all these instruments being arrranged so as to be interchangeable.

A lecture desk extends across one end of the room, and is supplied with water, gas and electricity, with a hood which permits the making of experiments with which objectionable odors are associated.

A sufficient amount of apparatus has been secured to illustrate all of the important laws and phenomena of chemistry.

Physics.—For lecture room demonstration in physics we have a very large and carefully selected set of apparatus, with which it is possible to fully and practically illustrate the subject. An enumeration of the individual pieces would require much more space than is available in this catalogue, hence is omitted.

Elementary Physics.—The instruction in elementary physics being given entirely by the experimental method, a considerable supply of apparatus is required. The more important pieces are: an Atwood's machine, balances and pyknometers for specific gravity determinations, spring balances for the resolution and composition of forces, air pump, Mariotte's tubes, rotating machine, siren, color discs, lenses, prisms, photometer, Holtz machine, electric batteries, galvanometers, dynamos, motors, and all the additional material required for a thorough elementary course.

Advanced Physics.—The laboratory work in advanced physics is that outlined in Sabine's Laboratory Course in Physical Measurements, which is Physics C of Harvard University. The course consists of a very carefully selected series of experiments. All of the apparatus necessary for this work is available: among these are micrometer callipers, a spherometer, balances, a torsion pendulum, a sonometer, a Kundt's tube, organ pipes, a Bunsen's photometer, a fine spectrometer, a magnetometer, a tangent galvanometer, Wheatstone's bridges, wire and box forms, batteries, etc.

The Assay Laboratory is provided with pulp scales for each student, five button balances, five Hoskin's crucible furnaces, large size, one number four and four number three Hoskin's muffle furnaces, one Brown's combination furnace, two power crushers, and a power grinder run by a two horse-power gasoline engine, a grinding plate, and a full set of samples, illustrating every variation of ore in mine, mill and smelter.

The Laboratory for Qualitative Analysis, besides desks and fume closets, has a large desk for special operations, every requisite for successful work being supplied.

In quantitative analysis, the students may draw from the supply room any apparatus they may desire for their work, consisting of platinum crucibles, dessicators, measuring flasks, pipettes, beakers, flasks, burettes, reagent bottles, stoves, etc.

One corner of this room is separated from the remainder by a sash partition, and serves for the balance room.

In addition to the standard reference books in science, and the principal books on its different branches, the department library contains the following complete files of scientific journals:

American Journal of Science and Arts, Journal of the American Chemical Society, Journal of Analytical and Applied Chemistry, Berzelius' Jahresbericht, Jahresbericht uber die Fortschritte der Chemie, etc., Berichte der deutschen Chemischen Gesellschaft, and many sets, more or less complete, of other journals.

This makes a reference library which is very valuable, and which will afford excellent material for aid in scientific research, covering, as it does, the progress of the science since 1820.

The collections in mineralogy, geology and economic geology are very fine and extensive, and cover all the geological horizons.

The private collection of the professor, for many years used for the purposes of instruction, has been acquired. It is particularly rich in minerals of economic importance. The collection exhibited by Montana at the Columbian Exposition was presented by the state to the college, and gives an excellent view of our state's mining resources. A very large amount of duplicate material is constantly being used to increase our collections through the medium of exchange.

Two sets of crystal models, and the crystallized specimens in the collection are available for instruction in crystallography.

Shops.—The equipment in this line is now complete, and consists of the latest patterns of standard machines from the best makers in the country. Before selecting this machinery, the shops of several of the most prominent engineering schools in the United States were studied and the aim has been to make our equipment a model one. Power is furnished by one of the latest type Imperial high-speed engines, of 65 H. P., which also drives the blower.

For woodworking, five double and three single carpenter benches are provided, making accommodations for thirteen students at a time. Each side of these benches contains two drawers with complete sets of carpenter tools, and two lockers for exercises. Twenty-six students can therefore be accommodated, each having an individual set of tools, for the care of which he is held responsible. For wood turning and pattern making there are seven speed lathes, a pattern-making lathe, a scroll saw, a double-revolving rip and cross-cut saw, a variety wood worker, and a 20-inch surface planer.

For machine work there are four screw cutting lathes of 16-inch swing, and one of 18-inch swing; 13-inch, 20-inch, and 28-inch drills; a universal milling machine, a 16-inch shaper, a 22-inch by 22-inch by 6-foot planer, a universal tool grinder, a cutter and reamer grinder, a polishing lathe, and a shop saw. Benches for twelve students are provided. There is also room for adding additional equipment as the needs develop. The tool room is well supplied with small tools, and the wash room contains lockers for students' use.

The Forge Room contains eleven forges. All the piping for bloth blast and exhaust is of tile and placed under the floor. The forges have down draft exhaust, keeping the room free from smoke and giving a very neat appearance. There is a full equipment of anvils and other necessary tools, and a power shear for cutting up stock.

The engineering laboratory contains, at present, a 40 H. P. Woodbury high speed engine, especially designed for experimental work, a 15 H. P. vertical high speed engine, gauges, calorimeters, indicators, absorption brakes, several sizes of platform scales, tachometers, and similar apparatus for the study of steam engineering. The shop engine is also fitted up for experimental work, and a threshing engine will be added during the coming year.

For the testing of materials there is a Riehle standard automatic and autographic screw power testing machine of 100,000 pounds capacity with auxiliary instruments, fitted up also for beam testing; an Olsen torsion testing machine capable of breaking a specimen 1 1-2 inches by 5 feet; and a Fairbanks' cement testing machine.

For electrical work the college owns two specially designed multipolar dynamos, each of 15 K. W. capacity at 125 volts. They can also develop 225 volts, and are arrranged with commutator at one end and 6 collector rings at the other, so as to give one, two and three-phase alternating currents. The two machines thus give a large number of combinations. Besides these there is a 6 K. W. bipolar dynamo and a good supply of voltmeters, ammeters, and wattmeters of the latest patterns. Some new dynamos will be added the coming year, besides transformers, recording wattmeters, etc., making the equipment complete and thoroughly up to modern standards.

For the study of steam boilers the 85 H. P. return tubular boiler in the shop building is available, and also the 25 H. P. boiler in the experiment station. Apparatus is provided for measuring feed water, fuel, and everything necessary for complete boiler tests.

Surveying Instruments.—In this line the college has two transits, one with solar attachment; two levels, a field compass, a plane table, a sextant and chains, tapes, and rods of various kinds.

Water measuring instruments include three current meters, two automatic recording water registers ,test weirs, and other auxiliary apparatus.

The art department has a good equipment of casts in busts, masks, parts of the human figure, ornament and geometric solids; benches and tools for wood carving and clay modeling; photographic copies of sculptures and world pictures.

The kitchen laboratory is a large room provided with cupboards and conveniently furnished with tables, sinks, range, an Aladdin oven, and a good supply of cooking utensils of all kinds. Individual work tables are provided for the use of each student. These tables have a full equipment of cooking utensils.

Opening from the kitchen is a dining-room with sideboard well supplied with table linen, dishes and silver.

The sewing room is furnished with a large cutting table, six small sewing tables, three sewing machines and a case for work.

The Biological Laboratory.—The apparatus of the biological department consists of the following instruments and materials: Seventeen compound microscopes of the Zeiss and Leitz patterns, one Zeiss dissecting microscope, fifteen Barnes' dissecting microscopes, numerous hand lenses, dissecting instruments, razors for hand sectioning, haemacytometer, automatic microtome, hand microtome, slide-ringer, wall charts, a fine set of models of parts of the human body and of the horse, cases, etc., for collecting plants and insects, parafine bath, human skeleton, alcoholic fishes and crustacea, microscopic preparations for class use, collections of mollusca and insects, an herbarium of Montana flowering plants, dried specimens of mosses, lichens and parasitic fungi; reagents and stains for microscopic preparations.

For the year 1898-99 there has been added the apparatus necessary for bacteriological work, including steam and hot air sterilizers, an incubator, Wolfhuegel counting apparatus for water examination, and other accessories.

The green-house and conservatory on the experimental farm furnish botanical material for use in the winter months, as well as specimens of such plants as grow naturally only in warmer climates than that of Montana.

FACULTY.

The faculty, twenty in number, and nearly all from the leading colleges and universities of the east, make one of the strongest corps of instructors in the west.

JAMES REID, A. B., President,
Professor of Mental, Moral and Political Science and Astronomy.

S. M. EMERY,
Professor in Horticulture.

FRANK W. TRAPHAGEN, Ph. D., F.C.S.
Professor of Physics, Chemistry and Geology.

W. H. WILLIAMS, B. E. E.,
Profesor of Mechanical and Electrical Engineering.

R. S. SHAW, B. S. A.,
Professor of Agriculture and Assistant Agriculturist.

E. V. WILCOX, Ph. D.,
Professor of Biology and Veterinary Science.

WILL F. BREWER, M. A.,
Professer of Latin and English.

MISS HELEN BREWER,
Instructor in Latin and History.

MRS. F. E. MARSHALL,
Professor of Art.

MISS LILLA A. HARKINS,
Professor of Domestic Science and Art.

AARON H. CURRIER, A. M.,
Professor of French and German.

J. W. BLANKENSHIP, Ph. D.,
Professor of Botany and Bacteriology.

CAPT. GEO. P. AHERN,
Professor of Military Science and Tactics.

EDMUND B. M'CORMICK, S. B.,
Assistant in Mechanical Engineering and Shops.

W. M. COBLEIGH, E. M.,
Instructor in Chemistry and Physics.

MISS M. A. CANTWELL,
Principal of Preparatory Department.

MISS MAY TRAVIS, A. B.,
Instructor in Preparatory Department and Mathematics.

MISS VIRGINIA CORBETT,
Assistant in Preparatory Department.

H. G. PHELPS,
Principal of Business Department.

MISS STELLA SHAFF,
Assistant in Stenography and Typewriting.

MISS KATE P. CALVIN,
Piano.

DEGREES.

Upon the satisfactory completion of any of the college courses the following degrees will be conferred:

For the General Science Course and the Home Science Course, the Degree of Bachelor of Science.

For the Course in Agriculture, the degree of Bachelor of Scientific Agriculture.

For the course in chemistry, the degree of Bachelor of Analytical Chemistry.

For the Course in Mechanical Engineering, the degree of Bachelor of Mechanical Engineering.

For the Course in Electrical Engineering, the degree of Bachelor of Electrical Engineering.

ADVANCED DEGREES.

On the completion of one year of post-graduate work, or three years of professional work, and the presentation of an acceptable thesis, the college will confer upon the holders of Bachelors' Degrees, in their respective courses, the degrees of Master of Science, Master of Scientific Agriculture, Analytical Chemist, Mechanical Engineer, and Electrical Engineer.

The aim has been to combine the features of the technical or industrial school and the school of applied science, and in its organization and development, the acts of Congress establishing and endowing these institutions have never been lost sight of:

First—The aim has been to adapt the work to the industrial conditions of the state.

Second—To make the work of such character that it may give a liberal and practical education to the young people of the state, with the view of fitting them for the various callings and professions of life.

Third—"The leading object" has been "without excluding the scientfic and classical studies" to teach such branches of learning as are related to the agricultural and mechanical arts."

COURSES OF STUDY.

The following courses of study have been established with the desire to carry out these aims and objects as clearly stated in the first and second Morrill acts authorizing the establishment and endowment of these colleges:

1. Course in General Science.
2. Course in Agriculture.
3. Course in Chemistry.
4. Course in Home Science.
5. Course in Mechanical engineering.
6. Course in Electrical Engineering.
7. Course in Preparatory Department.
8. Course in Music.
9. Course in Bookkeeping.
10. Course in Stenography and Typewriting.

THE GENERAL SCIENCE COURSE.

This course may be considered as representing the general educational work of the college. It is arranged so as to meet the wants of those who seek to obtain a liberal and practical education through the study of the Mathematical, Physical, Natural and Economic sciences, and Latin or the Modern Languages and Literature. It provides a thorough training in Mathematics and Physics and in the natural sciences, Biology, Chemistry, Botany, Geology; also in the study of Mental, Moral and Political Science. It includes a liberal course in History, the English Language and Literature. The design is that any student completing the course shall be thoroughly equipped for the duties of life and fitted to enter successfully upon any chosen career.

THE COURSE IN AGRICULTURE.

The aim of this course is to give young men a general scientific education, to thoroughly instruct them in the relations of science to the various branches of agriculture ,and to supply the mental training necessary to successful investigators or practical agriculturists.

The student is taught the application of the principal branches of physical and natural science to the business of farming, and is afforded a thorough knowledge of its principles and practices. Instruction is given in regard to the nature of soils, the reason for, and the best methods of cultivation; the application of water to growing vegetation, and the action of irrigation waters upon the soil and crop; the constituents and characteristics of plants and animals, and the conditions necessary for their perfect development.

The student's time is not consumed in manual labor, except where especial skill is required in the performance of some particular work. His time is fully occupied in the instruction in class room, laboratory, field and shop. No pains are spared to give a high degree of intellectual training and special preparation for the business of farming.

The general studies of the course include mathematics, English, history, literature, and the principles of the general sciences. The direct application of these sciences is brought out early in the course, and as the student advances in mental training he is given more difficult work. During the senior year he is assigned subjects for original investigation. For a description of these studies see the General Science Course.

SHORT COURSE IN AGRICULTURE.

Besides the regular four-year course, the college provides a short course in agriculture, extending over two years, and beginning the first Monday in January and lasting thirteen weeks.

This course is designed to meet the wants of those interested in farming operations who feel that they have not the time to spend in taking a four years' course, but still wish to better fit themselves for the business of farming.

The work has been planned to give the largest amount of information and assistance possible. The subjects taught are those of which every farmer should have a full and clear knowledge ,and are presented in a manner to make the information helpful in the highest degree.

The short course, coming as it does in the winter, when the work on the farm is at a minimum, presents the best opportunity for the farmer to avail himself of the instruction given.

In the establishment of this course it was the desire of the board and faculty to present a comprehensive scheme of study that would be as inexpensive as possible. The student is required to pay a general fee of $5 a term, and fees covering the cost of materials used.

He has the free use of the college library, containing 3,300 carefully selected volumes and 2,000 pamphlets, besides the best agricultural papers published, choice magazines and daily and weekly newspapers.

Lectures treating of the following subjects will be given: Breeds and Breeding, Agricultural Engineering, Farm Dairying, Rural Economy, Animal Diseases, Practical Steam Engineering, Cultivation of Farm Crops, Feeds and Feeding, Horticulture; Economic Entomology, Veterinary Medicines, Shop Practice: Forge Work, Carpentry.

THE COURSE IN CHEMISTRY.

Dr. Traphagen and Mr. Cobleigh.

The purpose of the course in chemistry is to make educated chemists—men who are not only qualified to make correct analyses of what may be handed them, but who have also had, with their technical training, a good liberal education. The possibilities of the successful application of chemical knowledge to the solution of the problems of daily life on the farm, in the smelter, in the dye works, in the sugar refinery, in the gas works, in nearly all manufactures and the arts, are too well appreciated to need any argument.

The range of chemical knowledge is too wide to-day to be covered by any one man, so it will be wise, when the student of the chemical course has covered the required work, for him to select some definite line of work which he may decide to make his specialty. This is quite possible, as each student does the greater part of his work, not in the class room, but individually in the laboratory and library.

HOME SCIENCE COURSE.

The course in home science provides systematic schemes for study in those branches which are directly related to healthful living, appropriate clothing, and household decoration. The object of the course is to produce good home makers. Based upon the general science course, but providing also liberal courses in domestic science and industrial art, the instruction is both theoretical and practical.

MECHANICAL ENGINEERING.

Prof. Williams and Mr. McCormick.

This course deals with the science of machines. In order that the student may be capable of intelligently and skillfully designing, constructing and supervising all kinds of machinery, he should pursue a thorough course in which the theoretical goes hand in hand with the practical.

While a broad theoretical training is of primary importance, it is believed that from continued pratical applications of theoretic conclusions, a broader and more tangible conception of their truths may be derived. To explain theoretic principles, however ,is not the only value of the experimental work of the course. If the student desires to go from the college to the constructive or operative world, he must be familiar with working machines, methods of shop management, and as much of the every day detail of the machinist's work as it is possible for him to acquire, as a supplement to his higher training.

While it is highly desirable that the engineer should be a man of broad, general culture, the technical requirements of the course are so exacting that the student of mechanical engineering has little time to spare for culture work. To obviate the disadvantage arising from this fact some general studies are introduced into the course, in order to make it as broad and comprehensive as is consistent with a thorough training in the direct line chosen.

ELECTRICAL ENGINEERING.

Prof. Williams.

During the past twenty-five years electrical discoveries and inventions have multiplied at a phenomenal rate, and the commercial applications of electricity are now so numerous and so constantly increasing as to make it one of the leading branches of engineering. Its great and growing commercial importance in Montana makes it peculiarly fitting that the State Technical School should offer a course in electrical engineering to its students.

The general aim of the course will be to thoroughly ground the student in the scientific laws forming the basis of his profession, at the same time training him to adapt these laws to practice, to use his judgment, and apply strictly accurate and honest methods in all operations.

It is evident that a line of study which accomplishes the ends suggested will furnish an excellent mental training, but it is thought important to introduce additional studies especially adapted to furnish a broad and general culture. Hence a considerable amount of time is allowed for the study of language, history and political science.

As the well equipped electrical engineer must have a thorough knowledge of the principles of steam and hydraulic engineering, machine design and the mechanics of machinery, in addition to the subjects directly belonging to his special department, this course has been based on that in mechanical engineering, differing essetially from it only in the technical courses of the junior and senior years.

PREPARATORY DEPARTMENT.

This department of instruction has been extended to three years, thus placing it on a level with the accredited high schools of the state.

The course as it now stands provides, not only a thorough drill in the common branches, but in addition elementary work in the natural sciences, a choice in the languages, some knowledge of manual training ,and domestic science.

The object of this course is to prepare students for the freshman class in the college. It also furnishes a fair general knowledge to those whose circumstances will not allow taking a regular college course, and it is also helpful to those qualifying themselves to teach.

A liberal course of reading is given for each year, and students are requsted to cover the course as a part of their required work. It is also desirable that students purchase, as far as possible, these books, thus making them a part of their own library.

For entrance the student should be at least thirteen years of age.

Applicants will be required to pass an examination, or otherwise satisfy the faculty of their proficiency before entering any classes.

THE EXPERIMENT STATION.

In connection with the college, an Agricultural Experiment Station has been established. The object of this station is to further the interests of the agricultural industries in the state of Montana. This is done by conducting researches and experiments which may include the physiology of plants and animals; the diseases to which they are severally subject, with remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water: the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of Montana, as may seem advisable. For the support of this important department, the United State government appropriates yearly the sum of fifteen thousand dollars ($15,000).

DEPARTMENT OF MUSIC.

—Piano—

Miss Kate Calvin.

In this course special attention is given to thorough technique, and correct interpretation, with practical analysis of rhythm and form.

Selections from the following course in piano will be given according to the ability of the student.

Instruction in theory and history of music will be free to all members of the piano department.

Jadassohn and Emery's Harmony will be used, and those wishing to take a complete course in piano must pass examination in harmony.

Frequent recitals will be given by the students for the purpose of acquiring confidence in playing at public concerts. Pupils will also receive special training in memorizing and sight-reading.

THE COLLEGE EXPONENT.

This is a monthly journal, maintained by the students, and serves to give valuable training in English to the members of the editorial board and contributors, besides being the means of bringing the work of the college before a large body of subscribers throughout the state.

ATHLETICS.

Believing in the importance of athletics in their relations with college work, field sports and gymnasium practice are encouraged. Each year during commencement week one day is set aside for athletic contests. Great interest has centered in this day in the past, and the excellent health possessed by the students is attributable, in large part at least, to the systematic exercise taken in preparation for these events.

Respectfully submitted,

JAMES REID,
President.

University of Montana

PRESIDENT'S REPORT.

STATE UNIVERSITY, MISSOULA, MONTANA.

THE EXECUTIVE COMMITTEE OF THE STATE UNIVERSITY.

J. H. T. Ryman, Missoula, President.
Hiram Knowles, Missoula.
Thomas C. Marshall, Missoula, Secretary.

THE FACULTY.

OSCAR J. CRAIG, A. M., Ph. D. Pres.,
Professor of History.
CYNTHIA ELIZABETH REILEY, B. S.,
Professor of Mathematics.
W. M. ABER, A. B.,
Professor of Latin and Greek.
FRED'K C. SCHEUCH, B. M. E., A. C.,
Professor of Modern Languages.
MORTON J. ELROD, A. M.,
Professor of Biology.
FRED D. SMITH, B. S.,
Professor of Chemistry and Physics.
EUNICE JULIA HUBBELL, Ph. B.,
Instructor in English Literature.
JAMES H. WELLS, M. E.,
Profesosr of Mechanical Engineering.
MRS. WALTER WHITAKER,
Instructor in Music.
ELOISE KNOWLES, Ph. B.,
Instructor in Drawing.
LOUISE HATHEWAY,
Assistant in Physical Laboratory.
MARY A. CRAIG, B. S.,
Librarian.

President's Report.

Missoula, Montana, November 30, 1898.

To the Montana State Board of Education, Helena, Montana.

Gentlemen:—In accordance with Section 5 of "An Act to establish, locate, maintain and govern the University of Montana," the following report for the year ending November 30, 1898, is respectfully submitted:

ADDITIONS TO THE FACULTY.

Miss Eunice Julia Hubbell, Ph. B., of Drake University, took charge of the department of literature at the opening of the second semester in February, 1898, and Prof. James H. Wells, M. E., of the Kentucky State College, entered upon the duties of the chair of mechanical engineering in May, 1898. Miss Eloise Knowles was elected instructor in drawing at your meeting in June last, and in addition to the work in her department has been giving some assistance in the preparatory school. Miss Hubbell has given instruction in preparatory Latin. The other members of the faculty continue to perform their regular work as already noted in previous reports. Miss Louise Hatheway has been acting as laboratory assistant in physics and Homer McDonald as laboratory assistant in chemistry. Both Miss Hatheway and Mr. McDonald are regularly enrolled as students in the university.

THE LIBRARY.

About siteen hundred volumes have been added to the library, making the entire number of bound books 2,997.

The periodical list has been increased until it now comprises much of the best scientific and literary material published in periodical form. Quite a number of Montana newspapers are donated by their respective editors. This courtesy is hereby gratefully acknowledged. The principal government publications are regularly received. The number of pamphlets unbound is 2281. Many of these are scientific reports and quite valuable. As soon as the funds will permit it, they should be bound up in permanent form for their better preservation. The library is one of the indispensable requisites for good work in any of the respective lines of instruction. The best work is that which the student does for himself, and so the library must supplement the laboratory in scientific lines and in subjects of other kinds must itself be the laboratory. The best methods of instruction in history and literature, sociology and many other subjects demand well supplied libraries for the investigation work of the student as well as of the professor.

The most important work of the professor is to train the student in methods of investigation. Because this is true, our best institutions pay early attention to the equipment of their libraries with the books and material which the students need. It is just as impossible to do good work in humanitarian subjects without a library as it is scientific subjects without a laboratory.

THE MUSEUM.

This valuable adjunct of university work is not neglected, but on the contrary every effort to increase the amount of valuable material on hand is made. There have been large additions within the past year of such specimens as represent the animal and plant life of Montana. A large collection of fossils collected from eastern Montana has recently been added. This work, while thoroughly representative of Montana, of course takes on the usual general features of such scientific collections.

THE DEPARTMENTS.

Every department in the university has been strengthened by the addition of apparatus, equipment and such illustrative material as is needed in class work. The view is held that good equipment and needful supplies are invaluable, but that the most important feature of the department must be vital inspiring instruction. The apparatus may be all that can be desired, the supplies of material abundant, but unless the instruction is of proper character and given by an earnest teacher failure is unavoidable. Extracts from the reports of the various departments are found in the appendix to this report.

THE PREPARATORY SCHOOL.

The course of study in the preparatory school has been lengthened to three years. Some changes in the course have also been made to adopt the preparatory to the different collegiate courses. All grammar school work has also been excluded from the course and placed in the requirements for admission. Solid geometry and elementary physics are now required of all preparatory students. Students preparing for the scientific course are given an option the first year between biology and German, and a modern language, may be substituted for Latin in both the philosophical and scientific courses.

THE COLLEGIATE DEPARTMENT.

The class system has been entirely done away with in all courses except in the school of mechanical engineering, and the university plan adopted. A credit is defined as one semester's work of lecture, recitation or laboratory exercise of one hour four times per week. Thirty-two such credits are required for graduation.

That the needs and special inclinations of the different students may be consulted as far as possible, certain of these courses are required for each of the respective degrees and the rest are left to the student's selection.

Certain subjects are required of all students ,others are required in special courses and must be elected from definite lines of work; still others are free electives. The choice in free electives must in part be governed by the arrangement of the subjects on the program, and precedence is always given to required work or that which is a partial elective.

THE WEATHER SERVICE.

On the departure of the 25th U. S. Infantry from Fort Missoula, the instruments belonging to the Weather Bureau were placed in the keeping of the University. The instruments consist of a set of maximum and minimum thermometers, a standard thermometer, instrument shelter and rain gauge. A pair of wet and dry bulb thermometers for determining the dew point has been added, and also a standard barometer of the Fortin pattern.

The records at Fort Missoula have been taken continuously for the past nineteen years. As the University is but four miles from the Fort, in practically the same climatic conditions, the continuance of the observations is very desirable.

The work has been placed in charge of Prof. M. J. Elrod, of the Department of Biology.

THE UNITED STATES GEOLOGICAL SURVEY.

A topographical map of a portion of the state having Missoula as the center is being prepared by the government. This region is later to be worked up geologically, and will be given in the series of geological atlases now being issued by the U. S. Geological Survey. The University is aiding in this work in every way possible, and will be very much benefitted by the results reached by the survey. At the present writing a bench mark for altitude has been placed in the stone at the left entrance to the main building, the altitude being 3,212 feet above sea level. The triangulation party has established a bench mark on the campus ,with stone piers marking the meridian line, giving the latitude and longitude. The University, therefore, has altitude, latitude and longitude accurately determined, and these marks will no doubt be starting points for future work.

THE WATER STATIONS.

Within the last year the offer was made to the Hydrographic Division of the U. S. Geological Survey by the University authorities and those most interested, whereby the University agreed to take charge of such stations for measurement of river heights and discharges as the Government should deem advisable to establish in the vicinity of Missoula. As a result three stations were established by Mr. Babb of the survey in June, 1898, at the following points: At Missoula, on the Missoula river, where the height gaging is made on the city highway bridge, and the discharge gaging on the bridge of the Bitter Root branch of the Northern Pacific railroad; at Bonner, where both gagings are made on the highway bridge over the Blackfoot river; and at the Buckhouse bridge over the Bitter Root, from which bridge all readings are made.

The work consists of daily readings of gage heights made by observation at each point, and of discharge measurements made at varying intervals according as the rivers are stationary or varying in height. At least monthly measurements are required.

The importance of this work is very great since in no other way can accurate knowledge be had of the amount of water flowing through the river and of the fluctuations of the rivers. The data thus obtained of the volume of these streams for every day of the year and for many years in succession will be valued by engineers, farmers and municipal authorities alike, and the value must increase as the data increases.

The results obtained have already attracted much attention when published in the daily papers, and will in the future form a series of bulletins to be issued by the University. They are also published by the Government as portions of the regular bulletins of the U. S. Geological Survey.

The University agrees to furnish protection to all of the instruments and property used in this work. The work has been in charge of Professor F. D. Smith, of the Department of Chemistry and Physics. Messrs. Buckhouse, Newton and McCormick have been appointed observers.

BUILDINGS AND GROUNDS.

The legislature of 1897 passed an act authorizing the issuance of $100,000 in 6 per cent. bonds, due in twenty years and payable in thirty. Said bonds to be secured by the income from the University lands.

The bonds were promptly sold and a building commission appointed by the Governor. With the amount realized from the sale of bonds contracts have been made for two buildings. One of these will be known as Science Hall. It contains accommodations for the departments of Chemistry, Physics and Mechanical Engineering.

The larger of the two buildings will be known as University Hall. It will contain the library, museum, assembly room, department of biology, literary hall, gymnasium, president's office and secretary's room. It will also contain lecture rooms in mathematics, literature, history and the languages.

Both buildings are nearing completion and will when finished furnish the University work with convenient and commodious quarters.

The campus has been surveyed recently and the location of streets and walks determined and marked out. It is the purpose to improve the grounds as rapidly as possible, for beautiful and well kept grounds contribute not a little to educational progress.

SUMMARY OF ENROLLMENT.

United States History	35
General History	67
Civics	29
History of Philosophy	2
Psychology	8
Political Economy	2
Latin	132
Arithmetic	17
Algebra	96
Plane Geometry	66
Solid Geometry	46

Higher Algebra	10
Trigonometry	49
Analytical Geometry	3
Elective Geometry	7
Beginning French	37
Second year French	12
Scientific French	8
Beginning German	30
Second year German	13
Fourth year German	10
Free-hand Drawing	38
Preparatory Biology	6
Preparatory Physiology	6
Biology, first year, College	36
Biology, second year, vertebrate and invertebrate anatomy	9
Biology, third year	2
Structural Botany	10
Introductory Chemistry	31
Qualitative Analysis	3
Advanced Physics	7
Preparatory Physics	65
Mineralogy	5
Preparatory Composition	72
Preparatory Rhetoric	57
Advanced Rhetoric	40
Required Literature	27
Elective Literature	9
Bench Work in Wood	8
Lectures on Woodwork	8
Lectures on Pattern-making	8
Mechanical Drawing	20
Descriptive Geometry	6
Elementary Design	2
Steam Boilers	4
Music	56

EXPENDITURES.

The following is an account of the receipts and expenditures for the fiscal year ending November 30, 1898:

Drawn from legislative appropriation		$19,448.16
Salaries	$13,136.62	
Laboratory supplies	927.08	
Laboratory equipment	1,601.52	
Expressage, freights and transportation	437.84	
Library	1,267.55	

Repairs	112.93	
General supplies	246.23	
Printing and advertising	477.02	
Insurance	66.00	
Water, heat and light	542.80	
Improvements	94.15	
Office supplies	184.43	
Traveling expenses	353.99	
		$19,448.16
Total amount from appropriation	$19,448.16	
Transferred to library fund	1,267.55	
Net total appropriation	$18,180.61	

LIBRARY FUND.

Balance on hand December 1, 1897	$2,695.00
Matriculation fees paid in	1,305.65
	$3,900.65
Transferred to General Fund	1,267.55
Balance on hand	$2,633.10

All of which is respectfully submitted,

OSCAR J. CRAIG,
President.

APPENDIX.

Department Reports.

DEPARTMENT OF HISTORY.

Oscar J. Craig, Professor.

At the beginning of the second semester of the college year just closing, the work in literature was separated from this department and placed in charge of Miss Hubbell, the recently appointed instructor in that subject.

The professor in charge still continues to direct the work in history, and political and intellectual science.

The number enrolled in the various classes taught in the department has been as follows: General history 67, U. S. history 35, civics 29, history of philosophy 2, psychology 8, political economy 2.

DEPARTMENT OF LATIN AND GREEK.

William M. Aber, Professor.

The department has enrolled during the year 132 students in the various Latin classes and 5 in Greek.

At present three years of Latin is offered in the preparatory school, and seven courses, three and a half years ,of College work. In Greek seven courses are offered. In addition to these courses in the languages, one course each in the private life of the Greeks and Romans and one course in Greek archaeology are offered.

These courses cover the field of Latin and Greek language or ordinarily presented in the undergraduate departments of our American colleges and universities. Additional work will be provided for those who wish to pursue the subjects further.

During the year the Latin course in the preparatory school has been extended from two to three years, and this change will increase the quantity and improve the quality of the collegiate work.

Another important change has been a transfer of Latin from the position of a required to that of an elective subject in the philosophical collegiate course. Latin is now required in the classical course only. This change may diminish somewhat the number enrolled in the department, but this result should cause no regret, since the larger proportion of those taking a

SCIENCE HALL, STATE UNIVERSITY, MISSOULA, MONTANA.

subject because their own aptitudes and tastes so incline them, the better work can be done.

There has been a noteworthy increase in the number of students entering with some Latin preparation in the schools of this and other states.

Large additions have been made to the library of books pertaining to this department. The reading room is supplied with the leading periodicals devoted to the ancient classical languages and to archaeology. Illustrative material has been increased by a fine collection of photographs to illustrate ancient Greek sculpture.

DEPARTMENT OF MATHEMATICS.

Cynthia Elizabeth Reiley, Professor.

The progress noted in past reports has continued throughout the current year. Students of this department are realizing more and more the necessity of thorough work and the disadvantages of late entrance. The new preparatory course of study means much to the department and insures more rapid progress in the future.

Since the last report the equipment has been increased by the adddition of a spherical blackboard, blackboard compass, etc. An excellent surveying outfit is being provided.

The enrollment for the year ending November 30, 1898 ,is as follows: Arithmetic, 17; algebra, 96; plane geometry, 66; solid geometry, 46; trigonometry, 49; higher algebra, 10; analytic geometry, 3; elective geometry, 7.

DEPARTMENT OF MODERN LANGUAGES.

Frederic C. Scheuch, Professor.

FRENCH.

There are two beginning classes in French. One composed of first year collegiate students, the second composed of preparatory mechanical engineering students.

(a) The beginning collegiate class is at present taking "Chardenal's Complete French Course." This work will be finished by the end of the school year. In addition some reader will be used, as "Napoleon," or "La Guerre de l' Independence en Amerique."

(b) The preparatory class in French has also begun Chardenal's Grammar and will finish as much of the work as possible this year without using a reader.

(c) The second year collegiate class has finished Chardenal's Complete Course, Angier's "La Pierre de Touche." They have just begun reading Racine's "Esther."

(d) A class in scientific French was formed last year, which was open to the sophomore engineers. Since that time the faculty passed an order requiring all students in mechanical engineering to take a modern language in the preparatory years, therefore this class of scientific French was not organized this year, 1898-99.

GERMAN.

There are two beginning classes in German—preparatory and collegiate.

(a) The collegiate class in German is using Joynes Meissner's Grammar and have begun Joynes' Reader. They will finish both Grammar and Reader before the end of the school year and will then read "Hauff's Maerchen."

(b) The beginning class in the preparatory will finish as much of the grammar and reader as possible this school year.

(c) Second year grammar students have finished grammar and reader and are at present reading Chamisso's "Peter Schlemihl." Upon completion of this they will read Goethe's "Faust,'" or Schiller's "Wallenstein." One hour per week is given over to conversation and composition work.

(d) Third year (elective). Work although called for was not given this year, '98-'99.

(e) Fourth year (elective). A special class in conversation was called for and a class has been organized composed of last year's third year students who have finished reading "Wallenstein" and "Faust." This class meets twice a week for conversation.

All regular classes recite four times per week.

The number of students in the different classes since November 30, 1897, are as follows:

(a) Beginning Collegiate French	34
(b) Beginning Preparatory French	3
(c) Second year Collegiate French	12
(d) Scientific French (M. E.)	8
(a) Beginning Collegiate German	27
(b) Beginning Preparatory German	3
(c) Second year German	13
(e) Fourth year German	10

DEPARTMENT OF BIOLOGY.

Morton J. Elrod, Professor.

During the past year the department has had a healthy growth in number of students, in material equipment, and in the character of the work done.

The increase in material equipment includes ten compound microscopes by the Bausch & Lomb Optical Company, two of these being supplied with condensers and appliances for more advanced work. There are also two dissecting microscopes for elementary work, and a dozen doublets for these two instruments; a battery of accessory objectives for student work, including a one-tenth inch oil immersion; numerous microscopical accessories for use on the microscope; a Naples water bath, with thermostat; an incubator, for use in bacteriology and embryology; an additional stock of glassware, knives, nippers, staining dishes, etc., for student use; an assortment of plates for photography and lantern slide work; a dozen cages for insects; a case for storing microscopical slides and a case for storing paraffine blocks; an Edison mimeograph; a Minot microtome.

In addition to the above, considerable material has been added to the collection, though until the new quarters are occupied this material can neither be exhibited nor studied. Many bird skins have been added to those previously secured, making about 300 skins of Montana birds. Nearly a thousand slides have been added to the cabinet of microscopical material, largely the work of students. A hundred species of shells have been donated by the Smithsonian Institution. In connection with the work in geology, representing mainly fossil vertebrates from Montana, Mr. Earl Douglas has deposited with the university, until such time as he may make a more comprehensive study of the collection, some 3,000 pounds of fossils, with a large amount yet to be sent in. The collection of Montana insects has been added to as much as could be done in the limited time taken for collecting, and many have been mounted for exhibition in the museum.

The character of the work done by students has been very satisfactory. There has been continued improvement from the first organization of the department, and at the present time four different grades of work, as follows: A first preparatory class, first, second and third year college classes.

The following is a list of the classes taught, and students in each, since the last report: Preparatory biology, 6; preparatory physiology, 6; biology, first year, college, 36; biology, second year, vertebrate and invertebrate anatomy, 9; structural botany, 10; biology, third year, 2; total in all classes, 69.

DEPARTMENT OF RHETORIC AND LITERATURE.

Eunice Julia Hubbell, Instructor.

This department has been greatly benefitted by the additions made to the university library. With the library equipment already at hand ,together with that which is being placed on the shelves this year, the range of work can be greatly increased. From the first the character of the work in this department has been steadily improving.

Besides the work in rhetoric and literature, regular instruction has been given to the young ladies of the university in physical culture.

The number in the respective classes has been as follows: First preparatory rhetoric, 72; second preparatory rhetoric, 57; advanced rhetoric, 40; required literature, 27; elective literature, 9.

DEPARTMENT OF CHEMISTRY AND PHYSICS.

Fred D. Smith, Professor.

Of the subjects falling properly under this department's work, chemistry and physics have occupied the major portion of the time. Outside of the necessary class work and laboratory instruction the attention of the professor has been given to some analytic work including assaying and to the collecting and arrranging of material for the courses in geology and mineralogy which are being established. This latter work has served a two-fold purpose, since thereby specimens have been prepared for the new museum.

Owing to the increasing demands upon the time of the professor during the hours of laboratory practice, it has been necessary to have an assistant for one section of this laboratory work. It is pleasing to note the perfect satisfaction given by this assistant.

Besides material purchased for the use of the classes in physics, four of Queen's latest designs in x-ray tubes have been added to the equipment of the laboratory.

One hundred and eight crystal models have been purchased for the work in crystallography. The U. S. Geological Survey has presented the department with a series of rock specimens known as the "Educational Series." These number 140 and are accurately identified and labeled.

The above, taken with the many additions to the mineral collection made by donations and recent purchase of 75 specimens furnish ample material for the use of the student.

In July a special collecting trip was made to Butte, Montana, in order to collect for the museum. Samples of the first and second class ores from the most important mines were obtained, and in one case a full set of concentrates from the mill. From the country south of Butte many valuable minerals were collected.

The professor in this department has undertaken the statistical work on the production of brick and clay products, building and ornamental stone and of lime and gypsum for the Mineral Industry of New York. It is contemplated to enlarge upon this work until all of the minerals produced in Montana are covered by this census.

The apparatus on hand serves for quite varied work in analysis which the professor is prepared to do. With the additional facilities of the new laboratory the state will be provided with the opportunities for analytical and research work of many kinds.

The number of students in the different classes for the year ending November 30, 1898, has been as follows: Introductory chemistry, 31; qualitative analysis, 3; advanced physics, 7; preparatory physics, 65; mineralogy, 5.

SCHOOL OF MECHANICAL ENGINEERING.

James H. Wells, Professor.

The equipment which is being installed in Science Hall will make for the department two well equipped shops, and will furnish as well a small start for another one.

The wood shop and forge shop, above alluded to as two well equipped shops, will be modern and complete in every particular and will afford the student ample accommodation and facility for the best work in wood pattern making and in iron and steel forging.

The machine shop will have but a few machines to start with. But, before a machine shop class is organized, which will be in September, 1899, it is hoped that a full complement of machines will be procured, that the student therin may have at his disposal sufficient machinery to enable him to get a substantial knowledge of machine manipulations and machine shop processes.

The drawing room is well equipped with the usual furniture and such supplies and drawing instruments deemed essential to good work and modern methods.

In brief, the department will have after January 1, a well equipped drawing room, wood shop and forge shop.

The number enrolled in the several classes for the year ending November 30, 1898, is as follows:

Bench work in wood	8
Lectures on work in wood	8
Lectures on pattern making	8
Mechanical drawing	20
Descriptive geometry	6
Elementary design	2
Steam boilers	4

DEPARTMENT OF FREE-HAND DRAWING.

Eloise Knowles, Instructor.

The work during the year has been satisfactory, the students having displayed an increased interest and understanding of the subject. The total enrollment for the year is 38. This number is small on account of the change of this class from the preparatory department to the first collegiate year.

From two to four hours a week have been given to the work. The course is divided into two sections. In the first half, work is done almost entirely in pencil; in the second half, in charcoal. Drawings have been made in outline and in light and shade from geometric solids; from reliefs of historic decorative designs, leaves, flowers and heads from still life groups; from single pieces of furniture, and from the interiors of rooms, thus involving the principles of perspective.

In the ensuing year a nunmber of casts of decorative designs and of classical heads will be added to the equipment, affording additional material for charcoal drawing. Also some work in red chalk and in pen and ink will be given.

THE DEPARTMENT OF MUSIC.

Mrs. Blanche Whitaker, Instructor.

The department of music of the University of Montana provides instruction in vocal and instrumental music and opportunities for the study of chorus work.

The principal feature at present is the pianoforte school, which is in a very satisfactory and encouraging condition, both as regards number of students and their proficiency.

The school is divided into upper and lower, and each of these again into two grades—junior and senior. The juniors of the lower school use for studies the New England Conservatory Method, Bertini's or Heller's Easier Exercise Studies, little pieces from Bach, Reinecke and others.

The seniors continue the above with scales in similar and contrary motion, and major arpeggios of the common chord.

In the upper school the work of the junior grade comprises scales in thirds, sixths, tenths, similar and contrary motion, major and minor common chord arpeggios, Cramer's Etudes, Virtuosen Schule, and Clementi's Gradus a Parnassum.

The senior grade, in addition to the above, takes Arpeggio's of the dominant, diminished sevenths and studies by Chopin, Henselt, Moschelers and others.

From this it will be seen that the standard is both high and conscientious. The students are already showing in a very ghatifying manner the result of the training received.

Public recitals are regularly given by the students and are of great benefit to them both in encouraging exactness and in overcoming nervousness.

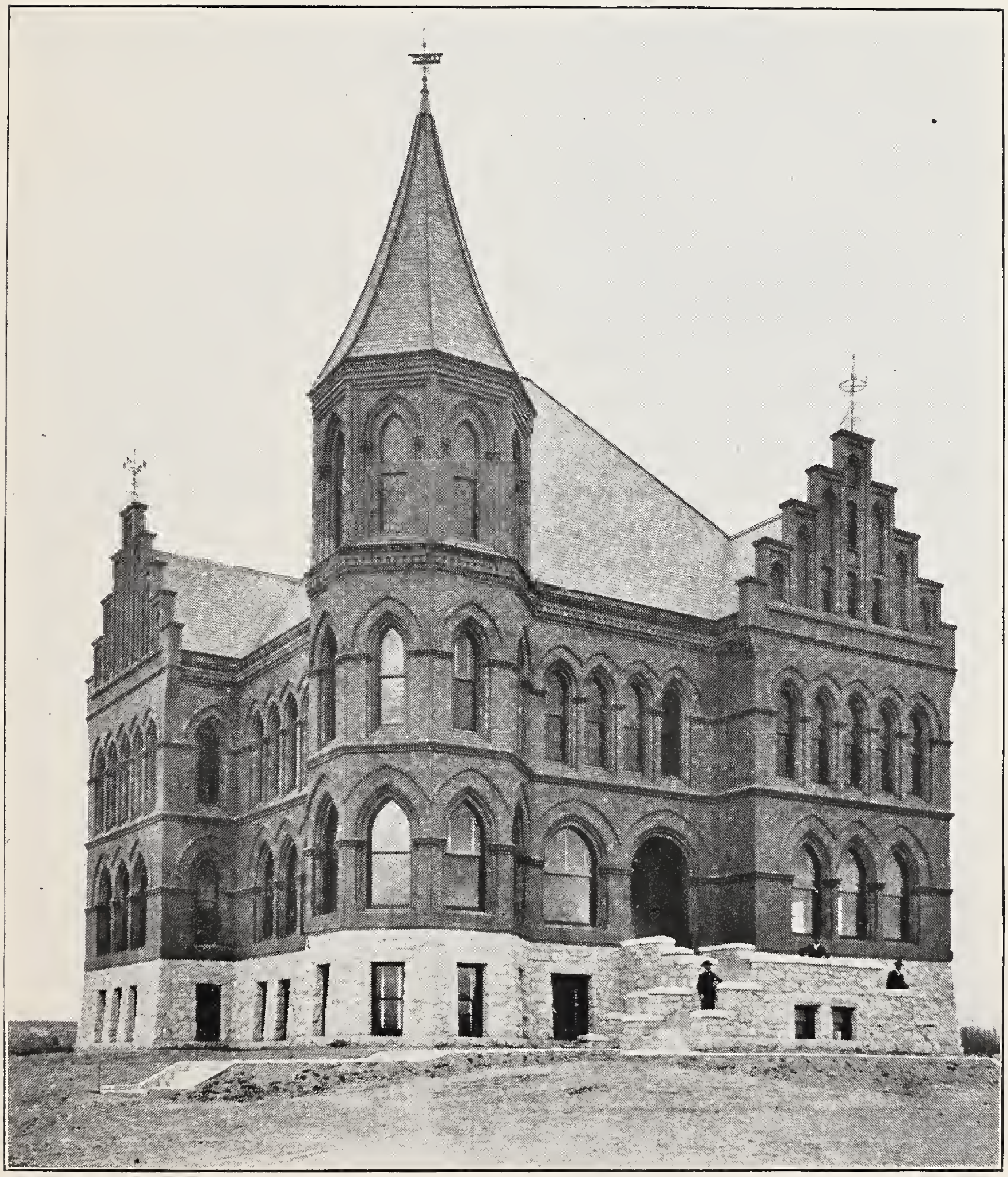
The total number of students in the department for the year ending November 30, 1898, has been 56.

STATE NORMAL SCHOOL.

Report of Executive Board.

THE EXECUTIVE BOARD, MONTANA STATE NORMAL SCHOOL.

Walter J. Crowell, president	Dillon
A. L. Stone, Secretary and Treasurer	Dillon
Fidel Huber	Dillon
F. C. Kress	Dillon
J. C. Mahony	Silver Star



NORMAL SCHOOL, DILLON.

Report of the Executive Board of the Montana State Normal School.

Dillon, Montana, December 1, 1898.

To the Honorable Board of Education, Helena, Montana.

Sirs:—Following I have the honor to present a report of the Montana State Normal School, covering, in a general way, the work up to this time. Being informed of a desire upon the part of your honorable board to receive a comprehensive report, it is hoped what follows will present our work in sufficient detail.

THE GROUNDS.

The site of the Montana State Normal School comprises a tract of ten acres lying upon rising ground about seventy-five feet above the city grade and slopes gently to the west and north and toward the city of Dillon. It has a water right more than ample for its highest cultivation. The northeast corner of the tract lies within the corporate limits of the city. It was donated by Poindexter and Orr as part of the inducement offered by our citizens to obtain the location of the normal at Dillon.

A strong fence, composed of three strands of wire fixed upon native cedar posts encloses it upon three sides, while upon the west or front a stone retaining wall from two to three feet in height with a graceful fence consisting of two lines of iron gas piping set through dressed cedar posts eight feet apart, is placed.

Gates for a ten-foot driveway are located near the corners of the front line, the driveway curving up to and around the building. It has at present a six-inch layer of coarse stone and will need a top layer of the same, finely broken, to make it smooth and compact.

A smooth concrete walk nine feet in width and one hundred feet long, leads up to the double stone approaches to the building. Along the street line is placed a wooden sidewalk twelve feet in width, made of one and one-half lumber. This connects with the city walks the full length of Atlantic street, across the city from north to south, with which in turn the east and west cross walks all join, making easy and dry access to all parts of the city.

A double row of native cottonwood trees (the only variety experience has proved a success) has been planted entirely around the grounds. The trees are twenty feet apart and the rows the same distance from each other. A grove of the same trees, numbering sixty, was planted in the southeast corner.

After a careful survey, the grounds were graded to a gradual slope to the west and north; one and one-eighth miles of ditches, covering every line of trees, and which upon account of the grade were required to be boxed their entire length, were put in.

Part of this work was paid for by the building board. The expense to the executive board was as follows:

Fixing wire fence upon three sides	$ 20.00
Surveying	10.00
Grading, leveling and rolling	186.00
Dirt for fills from city excavations, 20c load	84.00
Ditching and fluming ($40 not yet paid)	300.00
295 trees, furnished, planted, double-staked and tied, 35c each	103.25
Front line fencing	266.73
Share of sidewalk	105.28
Five tile drains under wall (not yet paid)	12.80

Grounds will yet need—

200 loads fine stone for driveway at $1 load	$200.00
200 additional trees for front sidewalk line, grove in southwest corner and to replace dead ones	70.00
Re-seeding	10.00

Gates for driveways and main entrance, lawn mower, hose, shrubbery, flower bulbs, fountain, etc., soon as can afford them.

THE BUILDING.

The building, which represents but one wing of the accepted plans, which include another wing similar to it and a main central structure, is built after the German gothic style and is very handsome. It is capable of indefinite expansion without sacrificing its architectural unity. It has two stories of pressed brick and high stone basement, trimmed with pressed brick in fancy shapes and terra cotta, and is situated to the west of the center of the grounds upon their highest point. It contains a room for the president's office, two each for ladies' and gentlemen's reception and toilet, two for model classes, one for laboratory, five for recitation, one for library, one assembly and one furnace and engine room. The assembly room is fully furnished, has a fine piano and seats two hundred and fifty people. All rooms are finished in Georgia white pine in natural wood, with oak stairways and tiled hallway.

Has complete systems of water, electric lighting and sewerage. It is heated by the Peck-Williamson hot air and revolving fan ventilating system, which, while not very economical to run. give fairly good results. The essential feature of this system is a ventilating stack eight feet square running from the foundation above the roof line. This stack contains independent compartments for smoke (into which the laboratory gases are drawn) and closet ventilation. A stack heater placed within its walls heats the air contained within and causes a circulation of air upon the hottest days. The pure cold air is forced by the fan over the heated furnace chambers through the hot air flues, of which each room is provided one entirely independent of the others and issues at the top of each room, settling as it cools and becomes vitiated, to the bottom, when the pressure of the hot air continually being forced in, together with the stack suction, forces the bad air through the openings along the floors, and between them until it reaches the main stack and flows upward and out. The ventilating fan, at a speed of 130 revolutions to the minute, changes the air in the entire building once every six minutes. It is run by a five (actual) horse power gasolene engine, which uses two gallons of gasolene per day (28c per gallon), which power also serves to pump the water to the tank on the top floor. The rooms are large and unusually well lighted. The furnishings are the latest and best made; the seats have arm rests for writing; the model rooms with revolving chairs and individual adjustable desks and an electric clock has been placed in the hallway. The furnishings of the president's room includes desks, table, lounge, revolving bookcase, carpet, mirror, typewriter and a desk for same; the toilet rooms have wash-stands, soap, towels, etc.; the chemical laboratory contains a special table faced with slate, containing dark closets, private drawers, apparatus drawers and closed hoods in which the evolved gases are disposed of. Each student has an individual section of the table for his own work. All the spaces are fitted with natural blackboards.

The building is a model in its way, against which no word of criticism can well be spoken, either as a building or as to its furnishings. The only question that can come up, and it is beginning to make itself felt already, is in regard to its size. With its present numerous classes and departments, to which are added new ones every ten to twenty weeks, it is expected soon to fill the use of its rooms to their full-time capacity.

JANITOR.

One janitor takes care of the building. His whole time is required and he performs all the work incident to the heating, ventilating, pumping and general work necessary. The blackboards and chalk rests are required to be washed twice each week and a high standard of cleanliness is insisted upon throughout the building. During the summer months he irrigates and tends to the trees and lawn. His salary for last year was $50 per month, which for the current year was increased to $60. The cost of maintaining the building to date is as follows:

Janitor one year to Sept. 1, 1898, $50 month	$ 600.00
Janitor three months to Dec. 1, 1898, at $60 month	180.00
Premium on $20,000 insurance on building, three years, paid by board	320.00
Premium on $15,000 building and furniture	240.00
Fuel for one year to September 1, 1898, 99 1-4 tons slack coal at $4.87 1-2 per ton	484.41
Fuel three months to Dec. 1, 1898, 35 tons slack (19 tons not paid for) $4 per ton	140.00
Repairs, chalk, gasolene (one gallon per day last year) lye, soap, brushes, brooms, furniture polish, etc	119.43
Total	$2,083.84

EQUIPMENT.

It is for this perhaps our board has felt it absolutely necessary to step somewhat beyond what the amount set aside for our use justified, though by no means beyond the real pressing needs of the school. Aside from the chemical table already mentioned, it has been found quite indispensable that much apparatus and many supplies in the way of chemicals be furnished for school use in the classes of physics and chemistry to enable their members to gain the knowledge and experience they have reason to expect from a first class institution.

For chemical use our expense has been	$298.03
Less that used and paid for by students	56.80
Balance	$241.23
Our physical apparatus is quite complete and includes demonstrations of the laws of science. Costing ($391.28 not paid for)	779.14

LIBRARY.

The study courses of the school being library courses, in which the student takes the topics assigned and finds his information, though partially from furnished references, though from no individual text-book, using the highest and most authoritative sources, getting it where he may and at the same time gaining that most valuable accomplishment—the ability to search out knowledge—requires a large and comprehensive library covering all lines of study, to which must be added the new books bringing the subjects down to the very latest thought concerning them. Like all the other rooms, it is large and well lighted, though it is becoming small for the growing needs of the school. It is amply provided with tables, at each of which six persons can sit; is well stocked with the latest and best encyclopaedias, dictionaries, atlases and works of reference covering wide fields. Carefully selected and especially chosen lines of academic and professional departments of study are here. Many works upon psychology, child study, pedagogy, philology, philosophy, sociology, economics, language, history, civics, politics, science, civilization, etc. Quality, not quantity, is recognized. Most of the standard authorities and the new additions as fast as they appear are added to the large list of the best periodicals of the day. The field of standard authors in general literature is fairly represented and the government reports are received. The students have free access to the library from six a. m. to six p. m. including Sunday and Saturday. No talking nor whispering is permitted and the room is usually thronged with students, who do most of their studying here, with a librarian to assist them, advising and locating their references received in the class room. It was found impracticable for a student to take the direction and care of the library and one of experience has her time fully occupied by the constant demands made upon it.

The library now numbers about twenty-six hundred volumes and represents a cost of ($758.31 not paid for)	$1,996.51
From building board	600.00

In both laboratory and library equipment we feel the school is rapidly obtaining a broad and strong foundation of material upon which to build widely and surely in the future.

ITEMS OF EXPENSE NOT INCLUDED IN THE FOREGOING.

Traveling, advertising, printing, postage, telegrams, etc.

Heavy expenses of these kinds are unavoidable at the opening of a new school. A personal canvas by our president through almost all the cities of the state was found necessary; announcements and printed circulars at the beginning of each term must reach if possible every teacher, trustee and the interested public generally. Two catalogues with engravings of the school, numbering four thousand copies in the aggregate, cost $185; notices in the daily and weekly papers and monthly magazines amounted to $175, while printed stationery, postage (2c for each catalogue) and so on went to make up the several amounts. These amounts are thought, however, to be in excess of what will be needed for these purposes in the future.

SUMMER SCHOOL EXPENSES.

As to the relative cost of the two summer school sessions, will say that the one for the season 1897 was for but four weeks, only five instructors were employed and not all the fields of work covered. The tuition of the model pupils also lessened the expense. The results, however, were highly satisfactory.

In the summer school this year the whole field was covered thoroughly by specialists. We realized that the inducements offered could not be too great and should be so strong that every teacher might feel he could profit by coming. A six weeks' term was had, with no tuition charged for the pupils used in the training work. The strength of the work appealed to the very best teachers. Sixty were enrolled, few of whom could have taken the work except during this, the time of their summer vacations. It served to advertise the regular school and many flattering reports were received from those in attendance. All this at a cost of $800 less than the expenses of the regular school session for the same time.

Cost of normal school for summer of '97	$ 66.40
Cost of normal school for summer of '98	507.00

THE SCHOOL.

The members of the executive board feel greatly encouraged by the results thus far attained. The high percentage of teachers attending, which is about ninety, and the wideness of the field whence they are drawn, are very gratifying. Less than twenty per cent are residents of our city. Eighteen of the twenty-four counties of the state are represented, while many more students are writing of their intention to come. This is but the first half of the second year, yet, in numbering over eighty, we already have attained the total for last season. It is an assurance that the work of making the school known has been well done, and the recognition of its superior advantages is becoming general. We should like to repeat here our idea of the absolute necessity of offering the very best up-to-date equipment and the strongest possible teaching ability in every department. This brings us back to the idea of specialists. They are the only ones properly fitted who by taking a particular line pursue it to the end and know it thoroughly. This we continually have in mind and it is not the intention that politics, religion friendship nor sentiment shall stand in the way of the best man for the place.

The enrollment for last year was 82.

The enrollment for this year is expected to go to 140. The courses of study are both academic and professional.

Miss McCormick and Miss Mabel Gordon, of Billings, both graduated from the professional course last June. They accepted positions in the Dillon public schools and are doing excellent work.

THE SUMMER.SCHOOL.

The summer schools have proved themselves such a strong factor in the success of the normal work and been commended so highly, as an opportunity furnishing all teachers during a common vacation period to take an academic, review or professional work, that it is considered as being a permanent feature. It permits the employment of the best educators of our state, who become familiar with the school, its plan and scope, besides enabling the school to profit by their work and the suggestions they make, while at the same time permitting them to speak among their home peoples from personal knowledge and have no fear but it will prove an influence for good and an increasing attendance will be the result. Though the cost has always been below that of the regular work, it will be further decreased by the salary plan now in effect, that of paying the teachers by the year, and thus commanding their whole time. The success of the summer schools has raised the question of a rearrangement of the regular work and it seems probable that in a year or two at the most, instead of two terms of twenty weeks each, a continuous year of four terms of twelve weeks each will be adopted. This is a distinguishing feature of the Chicago University work and many of the best schools are taking up with it.

This would enable new classes to be formed four times a year and a student of whatever advancement would always find a class just suited to his needs.

THE FACULTY.

The members of the faculty of the Montana State Normal School are pointed to with pride by the executive board, who yield nothing in strong executive, intellectual and teaching ability and results accomplished in favor of the majority of older and more largely attended schools, recognized as of the best, elsewhere. It is believed they will bear out in every particular and fulfill the conditions of "specialists for special work" spoken of elsewhere in this report.

Aside from their intellectual abilities they are a unit in active, earnest, intelligent efforts for the best interests of the school, seemingly willing to sink their own individuality for a common end, believing the advancement of the school will bring to each one the largest measure of personal success.

In the employment of the faculty a change in the terms of payment was made at the time of their election in June last. The present terms are as follows: The employment of each and every teacher dates from September 1st of the year in which elected for a period of one year, or until the first day of the following September, at a stated yearly salary, which is to be paid in twelve equal monthly payments. This gives command of a teacher's time during the whole year, and work in the summer school, if needed, will be paid out of the regular salary. This is a great saving, as teachers of the grade we employ cannot be obtained for less than we pay if needed but for the regular work. It is not, however, expected that the entire time of a teacher will always be demanded, as the usual summer rest fits one the better for the regular work. The salaries paid are not considered quite up to the grade of work expected and with the ability to pay and an increased attendance should come a reasonable advance. Our present faculty includes:

PROF. D. E. SANDERS, President, Psychology and Pedagogy.

Mr. Sanders has had twenty-one years of successful normal teaching experience. Salary, $2,500.

DR. H. H. SWAIN, Economics and History.

A graduate of Beloit College, also of the University of Wisconsin, from which latter received the degree of Ph. D. Salary, $1,500.

PROF. J. E. MONROE, Natural Sciences.

Received two years of graduate work in special preparation for this department in the University of Glasgow, Scotland. Salary, $1,500.

MISS LAURA L. MILLER, English and Latin.

Graduate of classical course University of Wisconsin, post-graduate work in University of Chicago, five years teaching experience. Salary, $1,200.

PROF. L. C. WALKER, Mathematics.

Graduate of Ohio State University, '93, degree A. B.; graduate of the Nebraska State University, '96, degree A. M.; member of the American Mathematical Society; assistant in mathematics for three years in Nebraska University; also three years in Lincoln Normal University. Salary, $1,200.

MISS SADIE ROGERS, Training.

Graduate of Kansas State Normal School; ten years of special preparation and training work; worked in institutes for the past eight years. Salary, $1,100.

Three of whom, i. e., Dr. Swaim, Professor Walker and Miss Sadie Rogers, have been employed since our last report.

Departments of reading, drawing, music, physical culture and assistance in the training work are under consideration and will be organized as soon as the means are at hand.

As stated elsewhere in this report, the increasing number of classes are rapidly taking up all the rooms of the school for the full time.

PRESIDENT'S REPORT.

A concise review of the school, its needs and general plan of work, is contained within the President's report herewith, and has the hearty endorsement of the Executive Board.

FINANCIAL.

The Secretary's financial statement is herewith included.

The Executive Board courts the fullest inquiry and investigation in all matters touching its administration, of whatever nature. It is hoped that your honorable board or a committee from it will take the time to visit our school and become personally acquainted with its progress. It is further desired that a representative committee from the legislature may visit us.

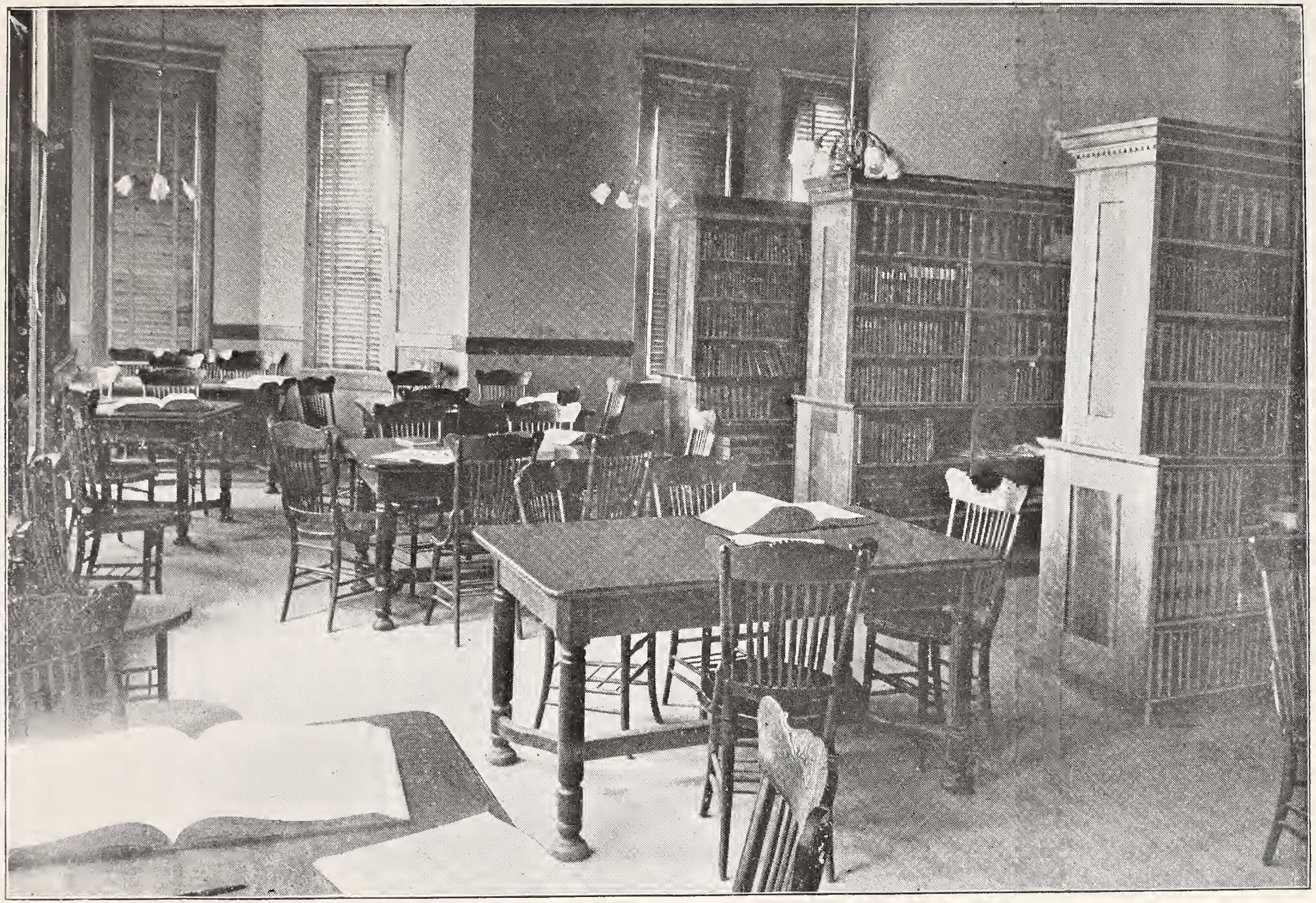
To committees of this kind can be shown and explained in detail the wants and needs of the school and its members can thus be able to form personal judgments of its real necessities.

We believe visits of such committees of great importance and to be desired by all public institutions.

THE COMING YEAR.

We herewith respectfully submit our estimates covering the needs of the Montana State Normal School for the coming year:

Faculty—Salaries.	
President	$2,500.00
Vice-President	1,800.00
Sciences	1,600.00
English and Latin	1,300.00
Mathematics	1,300.00
Training	1,200.00
Librarian	240.00
Additional instructors, covering music, reading, drawing, physical culture, training, assistant, etc.	1,200.00
Expenses.	
Fuel	$500.00
Light	100.00
Gasolene	125.00
Printing and advertising	300.00
Traveling expenses	150.00
Janitor	720.00
Replacing pump and deepening well	150.00
Maintenance	200.00
Postage, telegrams and sundries	75.00
Grounds	400.00



LIBRARY AND READING ROOM, NORMAL SCHOOL.

Equipment.	
Physical and chemical work	400.00
Library	500.00
Total	$14,760.00
Less tuition to be received	1,000.00
Amount needed	$13,760.00

To which for the succeeding year (1899-1900) should be added from 30 to 35 per cent. for increased number of instructors, equipment, proportionally heavier expense for maintenance, insurance, etc.

The estimate has been gone over very carefully and we are firmly convinced every amount called for represents an actual working necessity, to lack which would to that extent handicap the work of the school.

The idea has not been to ask for a cent of appropriation for a development beyond the real progress of the school itself.

SUMMARY.

The Montana State Normal School is not a local institution.
Its progress and advancement has been rapid.
It is filling the particular wants it is intended to supply.
Its merit is generally recognized.
It is up-to-date and progressive.
In proof of all of which claims can be mentioned:
Its rapidly increasing membership, now over eighty.
Its students all coming from the teacher's profession.
Their wide distribution and
Their enthusiastic praise of the work.

The Executive Board looks forward to its continued growth; to the time when every school trustee shall demand normal training as a prerequisite for the consideration of a proposed teacher's application; when the public generally shall demand it, realizing its positive need, and when a diploma of the State Normal School of the State of Montana, carrying with it as it does a state certificate, shall be valued at its true worth. Meanwhile our board will use every endeavor to make it widely and most favorably known.

I have the honor to remain, very respectfully yours,

WALTER J. CROWELL,
President of the Executive Board Montana State Normal School.

Financial Statement.

Report of Secretary and Treasurer, State Normal School, Period June 1, 1897, to December 1, 1898.

RECEIPTS.

State fund used to June 1, 1898	$7,860.24	
State fund used to December 1. 1898	5,945.80	
		$13,806.04
Cash—		
Tuition to June 1, 1898	$ 510.00	
Tuition to December 1, 1898	290.00	
Dillon public school to June 1, 1898	760.00	
Dillon public school to December 1, 1898	130.00	
Rent of assembly room to Jubilee Singers	16.00	
		1,706.00
Total		$15,512.04
Three bills now filed with State Executive Board, due and unpaid—		
Dillon News Company, books	$ 758.21	
Chicago Lab. Supply & Scale Company, apparatus	391.28	
Dillon Implement Company, supplies	102.10	
		1,251.59
		$16,763.63

An agreement was entered into for the season of 1897-98, with the trustees of Dillon public school, by which we took one room of their school, and during a portion of the time two rooms of it, and used it as a model school in our building. For handling these pupils the public school turned over to us this amount of money.

We have entered into an agreement with the trustees of the Dillon public school district to handle one room of their school in our building, during the year 1898-99. For this we are to receive $65 per month. Owing to the fact that we are much crowded for space, it will be impossible for us to handle more than this one room this season, and it is very questionable whether we will be able to give space for any model school work in the building next season.

These bills were run in anticipation of our appropriation of $15,400 being available.

FINANCIAL STATEMENT.

DISBURSEMENTS.

Salary—	
President D. E. Sanders, June 1, 1897, to June 1, 1898	$2,000.00
President D. E. Sanders, June 1, 1898, to December 1, 1898	1,250.00
Vice-President A. W. Mell, 1897-98	1,111.60
J. E. Monroe, 1897-8	1,246.97
J. E. Monroe, three months 1898-9	354.12
Miss L. L. Miller, 1897-8	997.58

Miss L. L. Miller, three months 1898-9		283.33	
Miss Della J. Long, one year		1,000.00	
Miss S. Rogers, three months 1898-9		259.71	
H. H. Swain, three months 1898-9		354.16	
L. C. Walker, three months 1898-9		283.33	
Mrs. L. C. Walker, two months, 1898-9		40.00	
Miss McCormick		15.00	
		———	$9,195.80
Light			50.80
Traveling expenses			256.35
Advertising and printing (including two catalogues)			512.30
Maintenance of building, repairs and closets		219.43	
Janitor salary		780.00	
		———	999.43
Fuel, 112 1-2 tons at $4.87 1-2 per ton			548.43
Insurance			240.00
Expense, postage, telegrams, etc., petty supplies			136.62
Summer School, 1897—			
J. E. Klock, instructor	$125.00		
Miss S. Rogers, instructor	100.00		
H. A. Hull, instructor	135.00		
D. L. Smith	30.00		
Supplies and incidentals	31.50		
Crane & Co., books	5.40		
	———	426.90	
Less tuition of teachers	216.00		
Less tuition of pupils model school	62.50		
County Institute fund	82.00		
	———	360.50	
Summer School, 1898—		———	66.40
H. A. Hull, instructor	$200.00		
M. A. Stapleton, instructor	100.00		
W. E. Harmon, instructor	50.00		
E. G. Cattermole, instructor	20.00		
Miss K. Paxton, instructor	20.00		
B. C. Hastings, instructor (expenses)	10.00		
W. T. Eddingfield, instructor (expenses)	20.00		
C. W. Birchard, instructor (expenses)	3.00		
J. E. Monroe, instructor	205.00		
Miss Laura L. Miller	152.50		
Miss S. Rogers	150.00		
Light	4.50		
	———	950.00	
Less tuition of teachers	$363.00		
County Institute fund	80.00		
	———	443.00	
		———	507.00

Improving grounds—		
Grass seed	$ 4.00	
Surveying	10.00	
Grading	290.00	
Fencing	266.73	
Sidewalk	105.28	
Trees	103.40	
Fluming	250.00	
		$1,029.41
Furniture, typewriter and clocks		118.25
Library		1,996.51
Chemical and physical apparatus		1,020.37
Total		$16,677.67

Of which $12,513.13 represents expense of running school and $4,164.54 represents assets of the school.

Cash on hand	85.96
	$16,763.63

A. L. STONE,
Secretary and Treasurer.

Dillon, Montana, November 30, 1898.

To the Executive Board:

Gentlemen:—I have the honor to herewith submit the report of the Montana State Normal School from June 20 to November 30, 1898.

THE SUMMER SCHOOL.

The second session of the summer school, June 20 to July 25, was well attended. The enrollment was sixty. Seventeen counties were represented by teachers. Students were in attendance from four other states.

Special work was given in literature for the lower grades by Superintendent Stapleton, of Anaconda, and in language and United States history by Superintendent Harmon, of Bozeman. President Sanders, Professor Monroe and Miss Miller, of the Normal faculty, and Principal Hull, of the Dillon schools, gave instruction in the various subjects offered. Miss Rogers had charge of the training department. This was a special feature and was highly appreciated by the students.

The attendance of teachers from so many points of the state, the interest manifested in all the work, the universal comment as to the great benefit of the summer school to those who had little or no opportunity for such help during the rest of the year, prove the wisdom of the board in planning the summer school.

ENROLLMENT FOR THE PRESENT TERM.

The enrollment for the current term is very encouraging. It has reached a total of eighty-two—the total of last year. The attendance is almost wholly of teachers, or those who are preparing to teach. The following counties have representatives: Beaverhead, Silver Bow, Deer Lodge, Lewis and Clarke, Cascade, Gallatin, Missoula, Ravalli, Granite, Park, Yellowstone, Custer, Sweet Grass, Choteau, Madison, Jefferson, Broadwater, Fergus—eighteen of the twenty-four counties of the state. There are representatives from four other states. Many teachers have signified their intention of entering soon. The present prospect guarantees an attendance for the year of double that of last year.

DEPARTMENTS AND INSTRUCTORS.

The following departments are fully organized and in charge of specialists:

Psychology and Pedagogy	President Sanders
Economics and History	Dr. H. H. Swain
Natural Sciences	Prof. J. E. Monroe
English and Latin	Miss Laura L. Miller
Mathematics	Prof. L. C. Walker
Training	Miss Sadie Rogers

There is urgent need for specialists for reading, drawing, vocal music and physical culture. Your plan for meeting the demands upon the institution in these lines will no doubt be consummated by the opening of the second term in January. An assistant in the English and Latin department will be very greatly needed the second term of this year.

THE LIBRARY.

Since the June report, more than one thousand volumes have been added to the library along the lines of literature, science, economics, history and pedagogy. Many very valuable books for general reference have also been provided. The leading magazines and periodicals have been furnished. The library is now well supplied with material for the needs of the different departments. It will be necessary to add the best of the new books which are being issued. This will not require a large expense at any one time.

The employment of a librarian has made the library of still greater value to the students. The library work is more thorough, systematic and helpful. It is a great assistance to the instructors in the assignment of the daily work.

THE LABORATORIES.

The chemical laboratory has been completed and sufficient apparatus provided to meet the present needs of the institution. The coming year some special work will be added in organic chemistry which will require additional material and apparatus.

The physical apparatus has been increased sufficiently to do excellent work in this department. A larger room will soon be a necessity for the physical laboratory.

THE TRAINING DEPARTMENT.

The work of the training department is increasing so much that better provision must soon be made for observation and practice. It is quite probable that a very satisfactory arrangement may be made with the public schools of Dillon by which ample opportunities will be afforded for observation. It will be necessary to arrange for some special classes for practice work. There will be no difficulty in securing these classes by the 1st of January.

Two more trained teachers will be required in this department the coming year.

A normal school must have material as well as students with which to do its work. Mere academic training, however good, does not afford the preparation needed by the teachers of the public schools of the state to-day. The efficiency of normal training depends largely upon material for practice and observation. This material is to be found in the various grades of our public schools. While the best teaching ability is needed in the academic courses of the normal school, just as good ability is required in the training department. The state cannot afford to have any but trained teachers in charge of the pupils who are the material of this department. Expert direction and criticism are necessary for the best results.

KINDERGARTEN AND MANUAL TRAINING.

As soon as possible, kindergarten and manual training departments should be organized. The manual training should be in connection with the lower grades used for practice and observation. Experience has proven that manual training is imperatively needed in these grades, affording a training and preparation for the higher work that can be supplied by nothing else. An opportunity will be afforded for a limited amount of training in the kindergarten work during the second term of this year.

There is urgent demand for training in these subjects. Many of our towns and cities will add them to their public school courses and the teachers of the state must be prepared to do the most efficient work.

PROGRESS OF THE SCHOOL.

The general progress of the school has been very satisfactory. The most perfect harmony exists among the members of the faculty. The work of the different departments is well organized. Hearty co-operation, excellent interest in every feature of the work and enthusiastic effort are characteristics of faculty and students.

THE SCOPE OF THE NORMAL.

The constant aim of the executive board has been to place the Montana State Normal upon the broadest basis. This is a necessity to-day. The State Normal must offer to the teachers of the state the very best academic instruction and ample opportunity for right training in all grades of public school work under the most competent teachers. This training should include all phases of high school, common school, manual training and kindergarten work. The State Normal must do all this to meet the approval of the people of this great state and to make a return in any degree commensurate with the sacrifices which the people make to maintain their institutions.

Very truly,

D. E. SANDERS.

FOURTH ANNUAL REPORT

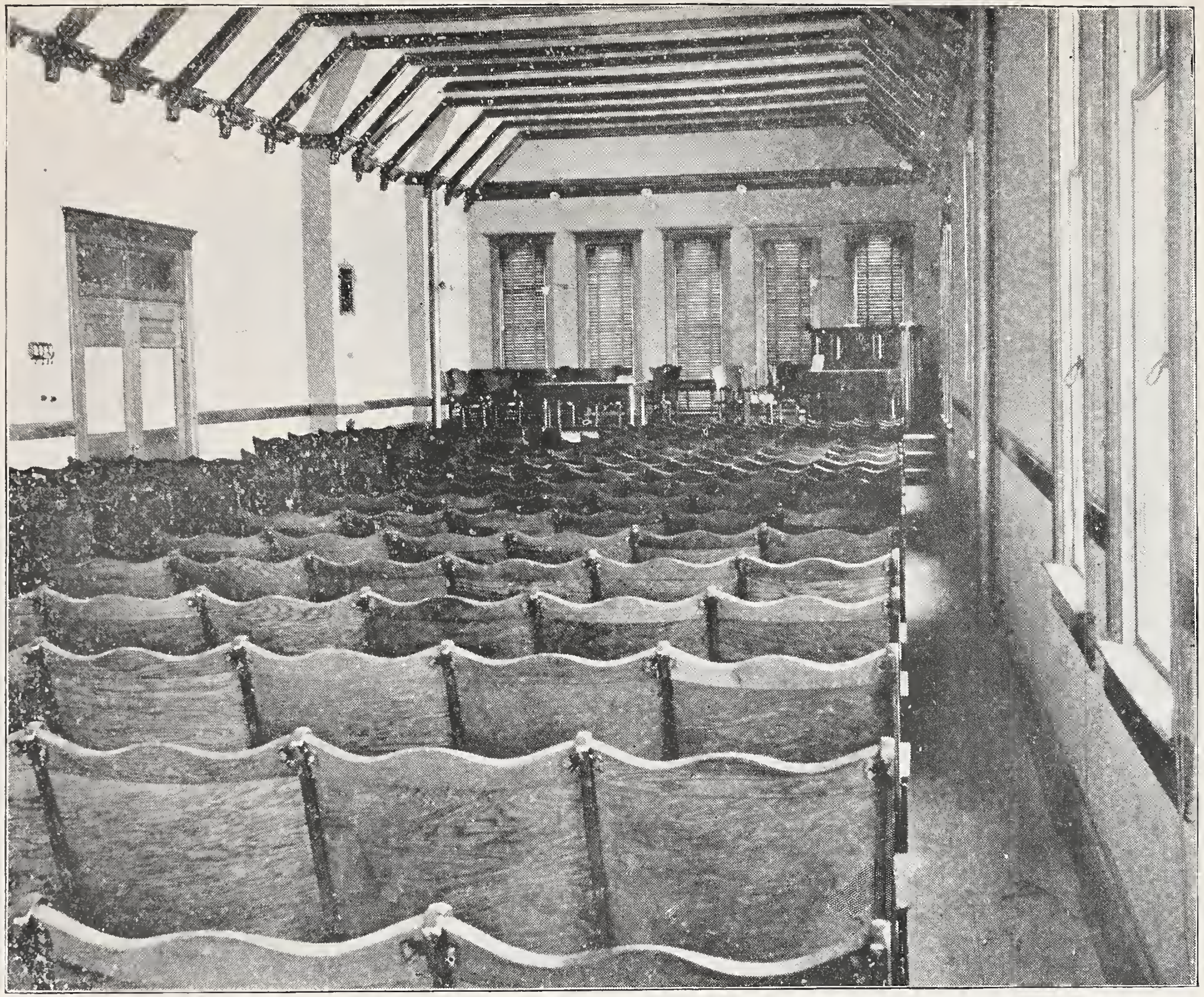
OF THE

Montana Deaf and Dumb Asylum

TO THE

STATE BOARD OF EDUCATION.

For the Year Ending December 1, 1898.



ASSEMBLY HALL, NORMAL SCHOOL.

BOARD OF TRUSTEES.

John F. Sheehy, President	Boulder, Montana.
Edward R. McNeill, Secretary	Boulder, Montana.
William V. Myers	Boulder, Montana.

E. S. Tillinghast, Superintendent.

President's Report.

PRESIDENT'S REPORT.

To the State Board of Education:

Gentlemen:—I have the honor to submit the fourth annual report of the Board of Trustees of the Montana Deaf and Dumb Asylum.

You will find appended the report of the Superintendent, which gives all needful information in detail regarding the attendance, expenditures, management and health of the school.

It is a pleasure to report that the school is now established on a permanent basis and is in every way far better fitted for satisfactory work than ever before.

The management has been conducted with strict regard to the necessities and not the possibilities of expenditure, and of the total maintenance appropriation for the past two years, there reverts to the State Treasury an unexpended balance of $4,000.

I would especially call your attention to the recommendations of the superintendent regarding the care of the feeble-minded, and would respectfully urge upon your honorable body that favorable action be taken in regard to the matter.

The finishing up of the fourth story of the present building is also important, and must be done at an early date—the sooner the better.

The management of the institution has been careful and conscientious, in close accord with the high and generous purposes of its creation, and effective in realizing the exalted aim of training helpless deaf and blind children to be intelligent members of society and valuable citizens.

Respectfully submitted,

JOHN F. SHEEHY,
President of the Board.

Superintendent's Report.

Boulder, Montana, December 1, 1898.

To the Board of Trustees:

Gentlemen:—I have the honor herewith to present the fourth annual report of the Montana Deaf and Dumb Asylum for the year ending December 1, 1898.

After long endurance of severely trying conditions the school entered upon a new era in its history with the removal last May into its permanent home. Teachers and pupils have entered upon their work for the new school year with zest and enthusiasm. Since removal from our old quarters there has been no sickness requiring the attention of a physician. From every point of view the school's condition and possibilities of progressive development have vastly improved. Our increased facilities enable the matron to take entire charge of an oral class, and thus relieve the other classes and render the instruction of the deaf much more effective than last year. The purchase of much-needed school room apparatus and the acquirement, mainly by gift,, of the nucleus of a school library, have aided materially in the work of instruction. A manual training shop has been fitted up in which the boys will receive a systematic course of instruction in the use of carpenter's tools. Some first-class gymnasium apparatus presented to the school has been put up in the unfinished attic story and is greatly appreciated, especially by the blind boys.

The pupils are at all times under the close supervision of instructors and are kept profitably occupied the greater part of their time. Manual labor is considered an essential educational factor and with proper alternations about 2½ hours per day are required with about six hours of school room work. The boys have assisted materially in planting trees, fence building and removing rock from the plowed ground. As far as possible, the discipline of the school is that of the home, where reason and affection relegate to the background the arbitrary exercise of authority that appeals principally to motives of fear. A few of the most advanced pupils among the deaf and blind have taken up algebra, rhetoric, English history and physics. Great attention is devoted to instrumental music by the blind, with very gratifying results. The majority of the deaf pupils are beginners who have entered the school with absolutely no verbal language, and must therefore devote most of their time to the acquisition of simple English. Those who have any remnants of speech or hearing are taught by the oral method.

ATTENDANCE.

There have been present within the past year 32 pupils, of whom 26 are deaf and six are blind; 12 are girls and 20 are boys; there are now on file applications from 7 pupils eligible and likely to enter school within the next few months.

COMPLETION OF THE FOURTH STORY.

The original building contract did not call for the completion of the attic story. With close crowding there is at present not available dormitory room for more than 36 pupils. The room intended to be reserved for hospital use in case of severe illness or the outbreak of contagious disease is now of necessity used as a dormitory. In view of these facts, the probable growth of the school and the inconvenience and expense of requiring teachers and help to board outside, I would recommend that the attic story be finished off for dormitory use. The estimated cost of this is $1,200.

CARE OF THE FEEBLE-MINDED.

Sections 2333 and 2346 of the Political Code explicitly provide for the admission and training of feeble-minded children in this institution, but practically it has been impossible to carry out the intent of the law. Suitable provisions for this class of children should be made, or the law recognizing their right to admission be repealed. An entirely separate building for them is absolutely necessary, since it would be little short of criminal to injure and degrade normal-minded deaf and blind children by compelling or allowing them to associate with imbeciles and idiots and be associated with them in undiscriminating popular thought. Common sense and all educational theory and precedent is overwhelmingly against such an attempt and no corps of officers and teachers would assume the responsibility and risks that it would involve. The necessity for a separate building is still more apparent when it is observed that in all states having institutions for feeble-minded children, the number of inmates in these institutions is at least equal, and in several states more than double the number of deaf pupils in schools for the deaf in the same states. In nearly all the older schools for the feeble-minded the custodial feature has become prominent and the care of epileptics is an important phase of the work, since epilepsy is found as a predisposed or complicating cause of about 60 per cent of all cases of feeble-mindedness.

In a majority of cases it is not possible to outgrow or overcome the condition of defective or lacking mentality which calls for special treatment and training in a school for feeble-minded. Sense-training, bodily development, simple outdoor work become of very great importance, while ordinary text-book education is only possible to a very limited degree or not at all. Most of the larger institutions for the feeble-minded have hundreds of acres of land under cultivation in order to afford an abundance of simple but useful outdoor exercise for the inmates. Only too often the feeble-minded child has animal passions fully developed, but is totally without corresponding moral force or will power to hold in subjection these passions. Mental weakness is usually accompanied by feeble or erratic muscular development and abnormally low vitality, so that the feeble-minded are peculiarly subject to the ravages of disease and to premature death.

These several facts render its conclusion inevitable that in establishing a department for the feeble-minded, provisions should be made for its growth along lines strictly in accord with the peculiar necessities of such an institution and with the certainty of its ultimate separation from the school for the deaf and blind clearly in view. The sole reason for their present connection is that of economy, and any attempt to establish and conduct the two departments in close interdependence will certainly result in ultimate injury to each, since what suits one in the way of buildings and permanent arrangements will not be the least suited to the other.

I would urgently recommend, therefore, that an additional tract of land be purchased adjoining or very near the present tract, and that the department for feeble-minded be established on a comparatively independent basis, thus rendering possible a wise and permaent policy of development and the avoidance of all costly makeshifts.

The building should be plain and roomy, having a capacity for 50 to 60 inmates. From a sociological point of view the care and training of the feeble-minded is a subject of far-reaching importance. Feeble-mindedness begets feeble-mindedness with frightful certainty. A record of 55 families taken from the books of 25 county poor-houses in Indiana shows 81 feeble-minded women, 51 feeble-minded men, 130 feeble-minded children. Pages of such statistics might be given, all of the same terrible imports, from the ranks of the highest grades of imbeciles are constantly recruited the ranks of petty criminals, prostitutes and tramps, so many of whom ultimately end their lives in county poor houses at the tax-payer's expense. An ounce of prevention here is worth many pounds of the cure attempted by charitable organizations, poor-houses and insane asylums.

As Dr. Howe once said, the training of feeble-minded children is the last but still necessary link in order to embrace all the children in the state in the great educational movement of the age. There are now 8,000 such children attending the 18 state institutions in this country.

I have the names and addresses of feeble-minded children reported by County Superintendents of Schools, and there are thirteen such children, mostly epileptics and of school age, in the Warm Springs Hospital for the Insane. The reports from the county superintendents are very incomplete, and I consider 50 a conservative estimate of the number of children in the state who should be sent to a special school. Some of these are very pitiful cases, whose care at home is an almost intolerable continuous strain upon the resources and happiness of the family. Others are so irresponsible as to be a constant menace to the moral welfare of their normal associates. A few are harmless and yet useful as hewers of wood and carriers of water. In view of the facts stated and the laws already passed, it is certainly incumbent upon the state to do something for this class of children.

CARE AND IMPROVEMENT OF GROUNDS.

About 250 trees have been set out and are doing well; nearly a mile of substantial fencing has been built; 15 acres of land has been plowed and the rock piled and moved preparatory to cultivation; a substantial root cellar 19x27 feet, with double stone and brick walls and cement floor, has just been completed.

Next spring it will be advisable to put up a barn for the care of a team; the team can be used to a great advantage in cultivating and improving the grounds and hauling coal, freight, etc.

FINANCIAL.

There will be found appended to this report a statement in detail of all monthly expenditures.

The salaries paid officers and teachers are $1,200, $600 and $550 per annum with board, and $1,000 per annum without board; the engineer, cook and girl's superior receive respectively $70 and $35 per month, the first without board.

The total cost of maintenance for the year ending December 1, 1898, is $11,503.61, of which the principal items are:

Salaries of officers and teachers	$ 5,076.95
Per diem of members of board and secretary's salary	407.00
Water rights acquired	300.00
Salary and expenses of state architect, three months	105.18
Fuel	565.61
Furniture	900.00
Insurance	625.00
Fencing	410.00
Root cellar	600.00
Plowing, grading and removing rock	101.50
Carpenter tools	100.00
Food and miscellaneous supplies	2,912.57
Total	$11,503.61

As the above shows, occupation of a new building with grounds entirely unimproved has involved considerable extra expense but strong effort has been made to avoid all expense not necessary and directly conducive to the educational welfare of the pupils or the material improvement of the school.

The bonding bill passed by the last legislature failed of any practical result in hastening the occupation of our present building or providing for the feeble-minded, as contemplated in making up the estimates for the past two years. Expenditures, however, have been kept strictly within the limits of the original itemized estimates, as justified by the attendance each year, and of the total appropriation of $22,208 for two years there was expended the first year $6,704.50, and the second year $11,503, leaving an unexpended balance saved to the state of $4,000.

A few months' occupancy of the new building shows conclusively that its capacity is considerably below that figured by the architect, and that the heating plant is extremely expensive and inconvenient, and still not adequate in severe weather. The ventilation feature is excellent.

It is estimated that with the closest possible economy in heat and light the cost of coal and gasoline for the year will be upwards of $1,150. The local board and former superintendent are not responsible for this state of affairs, since they preferred a different set of plans and steam heat, but were overruled in favor of the plans and recommendations of the state architect, Mr. Paulson.

ESTIMATED VALUE OF REAL ESTATE.

40 acres of land	$ 1,400.00
Main building	48,600.00
Outbuildings and improvements	1,000.00
Total	$51,000.00
Estimated value furniture and school apparatus	1,600.00

Estimates in detail are herewith submitted for the maintenance of the school for deaf and blind for the next biennial period, and for the establishment of a department for feeble-minded. The salary list for 1899 is the same as that now in force. Other estimates are based upon present running expenses and the probable increase in attendance during the next two years.

Respectfully submitted,

E. S. TILLINGHAST,
Superintendent.

ESTIMATES FOR DEPARTMENT FOR DEAF AND BLIND.

1899.

Superintendent and teacher	$1,200.00	
Instructor in school and shop	1,000.00	
Matron and teacher	600.00	
Teacher of blind	550.00	
Engineer and janitor	840.00	
Laundry	280.00	
Cook	325.00	
General help and girl's supervisor	270.00	
Per diem of board and salary of secretary	400.00	
Medical attendance	200.00	
		$5,665.00
Food		2,300.00
Fuel for heat, light and water		1,200.00
Miscellaneous household supplies, furnishing books, stationery, freight, etc.		1,100.00
Building barn and ice-house, improvement and cultivation ground		1,100.00
Completion of fourth story		1,200.00
Insurance and repairs		150.00
Total for fiscal year ending December 1, 1899		$12,715.00

1900.

Salaries as above with addition of a teacher of deaf at $500	$6,165.00	
Food	2,500.00	
Fuel	1,200.00	
Household supplies, furniture, books, stationery	1,200.00	
Insurance and repairs	150.00	
Cultivation and improvement of ground and care of team	500.00	
		$11,715.00
Total of estimates for two years ending December 1, 1900		$24,530.00

SEPARATE SPECIAL APPROPRIATION.

For establishment of department for feeble-minded, purchase of land and erection of building	$30,000.00
Maintenance of department for three months	2,000.00
Total	$32,000.00

Estimates and bills allowed by local board for which warrants were drawn on building fund.

1898.		
Dec. 18	Estimate on contract	$1,095.00
	General Electric Co., dynamo	400.00
	C. S. Haire, salary and expenses	64.39
20	Estimate on account of contract with Chas. Suiter	1,500.00
Jan. 1	C. S. Haire, salary and expenses	840.00
	Freight on gasolene engine	50.67
Feb. 8	C. S. Haire, December salary and expenses	81.45
	Peck Williams Co., estimate on gasoline engine	300.00
	G. W. Dart Hardware Co., estimate on contract	1,200.00
March 1	Peck Williams Co., balance on engine	400.00
Feb. 14	Chas. Suiter, estimate on contract	1,456.00
March 8	Chas. Suiter, estimate on contract	1,100.00
15	Dart Hardware Co., estimate on contract	532.00
24	Chas. Suiter, estimate on contract	1,150.00
8	C. S. Haire, January salary and expenses	83.30
May 11	Chas. Suiter, estimates to cover orders on Chas. Suiter from Lees Taylor, material furnished	1,081.40
	Duluth Roofing Co.	392.50
	Geo. F. Cowan, attorney's fees L. White & Co., judgment	282.37
	A. B. Snell, labor	100.00
	Gillette Herzog Mfg. Co., iron and material	200.00
	C. K. Rogers, stone	136.50
	Wm. Beardsley, labor	34.60
	G. W. Dart Hardware Co., final estimate, less $140	1,400.00
	Peck Williams Co., balance on gasoline engine	121.53
	People's Electric Supply Co., wiring and lights	230.32
	C. S. Haire, salary and expenses	78.95
19	Chas. Suiter, final payment on contract	1,108.00
July 11	C. S. Haire, salary and expenses	118.27
	Total	$15,546.16

Statement in detail of bills allowed and paid on account of maintenance:

January 11, 1898.	
S. H. Knowles, milk, butter and eggs	$ 49.05
Hop Lee, December laundry	25.00
J. H. Murphy, insurance three years	300.00
F. C. Berendes, insurance three years	300.00
Central School Supply House	125.00
Chas. Hong, cook, December wages	35.00
J. B. Maxfield, meat	39.50
Wm. Wolter, wood	85.05
C. W. Sweet, confectionery	15.05

E. S. Tillinghast, superintendent, salary December and advances	112.94
Sarah A. Tillinghast, matron, December salary	50.00
L. A. Vawter, physician, salary December	20.00
Daisy Doyle, teacher, December salary	50.00
L. A. Divine, teacher, December salary	100.00
Quinn & McCullough, drainage	2.50
Gaffney Mercantile Co., supplies	98.08
T. A. Wickes, dry goods	7.30
	$1,414.47

February 8, 1898.

E. S. Tillinghast, superintendent's salary January	$125.98
Sarah A. Tillinghast, salary matron, January	50.00
Daisy Doyle, salary teacher, January	50.00
L. A. Divine, salary teacher, January	100.00
Bach, Cory & Co., rent two months	30.00
Marshall School Furniture Co., desks	70.70
L. A. Vawter, salary physician, January	20.00
Chas. Hong, cook, January	35.00
S. H. Knowles, milk and butter	54.76
E. Thomas & Co., supplies	17.02
Boulder Drug Co., supplies	2.70
E. Thomas, supplies	18.85
J. B. Maxfield, meat	54.93
E. Ryan, rent two months	40.00
A. M. Holter, hardware	3.35
Gates & Holt, blacksmith work	3.50
	$676.79

March 23, 1898.

Gaffney Mercantile Co., supplies	$114.23
Gaffney Mercantile Co., supplies	117.95
Miss S. A. Tillinghast, salary matron, February	50.00
E. S. Tillinghast, salary superintendent and postage	104.70
Daisy Doyle. salary teacher, February	50.00
L. A. Vawter, salary physician, February	20.00
L. A. Divine, salary teacher, February	100.00
Chas. Hong, cook, February	35.00
Hop Lee, laundry, January	25.00
Hop Lee, laundry, February	25.00
W. V. Myers, trustee, four meetings	20.00
John F. Sheehy, trustee, four meetings	20.00
E. R. McNeill, trustee and secretary's salary	46.00
F. E. Cornish, printing	3.00
S. H. Knowles, dairy supplies	49.26
E. Thomas & Co., supplies	25.74
J. B. Maxfield, meat	35.18

Anaconda Copper Mining Co., pump	3.00
W. P. Hoopes, wood	15.00
Boulder Drug Co., gasolene	60.54
E. Ryan, rent February	20.00
Sunn Lee, vegetables	5.35
	$942.95

April 12, 1898.

Daisy Doyle, salary teacher, March	$ 50.00
Hop Lee. laundry	25.00
Sarah A. Tillinghast, salary March, matron	50.00
L. A. Divine, salary teacher, March	100.00
E. S. Tillinghast, salary superintendent and advances	102.00
L. A. Vawter, salary physician	20.00
Chas. Hong, cook, March	35.00
S. H. Knowles, milk and meat	77.41
T. A. Wickes, dry goods	6.90
E. Thomas & Co., supplies	7.20
Boulder Drug Co., supplies	4.60
W. P. Hoopes, wood	10.00
J. B. Maxfield, meat	21.29
Herrmann & Co., carpets	72.90
Gaffney Mercantile Co., furniture and supplies	246.30
H. L. Shiveley, work on well	6.00
	$835.10

May 10, 1898.

Sarah A. Tillinghast, salary matron, April	$ 50.00
Daisy Doyle, salary teacher, April	50.00
L. A. Divine, salary teacher, April	100.00
I. D. Shope, janitor	101.45
E. S. Tillinghast, salary superintendent and advances	102.00
Thomas Hall, dairy supplies	22.60
E. Ryan, rent	40.00
Gaffney Mercantile Co., supplies	55.31
T. A. Wickes, dry goods	8.65
J. B. Maxfield, meat	36.41
Wm. Wolter, wood	16.25
S. H. Knowles, dairy supplies	36.27
Boulder Drug Co., gasoline	13.20
C. L. Thompson, wood	10.50
Chas. Hong, cook, April	35.00
L. A. Vawter, salary physician	20.00
	$697.64

June 17, 1898.

J. B. Maxfield, meat	$ 46.51
L. A. Vawter, salary physician	20.00
Jas. Simpkins, glass	3.30
Gaffney Mercantile Co., supplies	62.00
E. Thomas & Co., supplies, May	32.45
E. Thomas & Co., supplies, April	36.85
S. H. Knowles, milk and butter	26.90
Ira D. Shope, salary 26 days janitor, May	61.00
Sam Wade, transfer	3.25
Daisy Doyle, salary teacher	50.00
L. A. Divine, salary teacher	100.00
Bach, Cory & Co., rent Feb., March, April, 12 days May	51.00
Hop Lee, laundry April	25.00
E. S. Tillinghast, salary and expenses	115.75
F. F. Finch, drayage	18.25
Thomas Hall, milk	24.80
Sarah A. Tillinghast, salary matron	50.00
Hop Lee, laundry May	25.00
Chas. Hong, cook May and June	49.00
Boulder Drug Co., supplies	10.05
Samuel Triplet, work on well	33.80
John F. Sheehy, salary trustee quarter ending June 17	30.00
Wm. V. Myers, salary trustee quarter ending June 17	30.00
E. R. McNeill, salary trustee and secretary ending June 17	51.00
Gaffney Mercantile Co., furniture	169.00
	$1,124.91

July 12, 1898.

L. A. Divine, salary teacher	$100.00
C. L. Thompson, wood	9.00
L. A. Vawter, salary physician	20.00
Hop Lee, laundry, June	16.00
S. W. Gates, filing saws	75
Sarah A. Tillinghast, salary matron	50.00
E. Thomas & Co., supplies	4.90
Horace Taylor, drayage	6.50
C. S. Haire, salary architect and expense March, April, May	223.45
A. M. Holter Hardware Co., pump and fixtures	33.40
Thomas Hall, milk	9.95
F. E. Cornish, printing	6.00
Ira D. Shope, salary janitor	70.00
Daisy Doyle, salary teacher	50.00
	$599.95

August 9, 1898.

Gaffney Mercantile Co., supplies	$ 8.65
Jas. Simpkins, lumber, etc.	5.35
John W. Estridge, plowing	55.00
Sarah A. Tillinghast, salary matron	50.00
Gaffney Mercantile Co., supplies and range	237.39
Adams Heating & Plumbing Co., window bars	6.00
E. S. Tillinghast, salary and postage July	101.50
E. S. Tillinghast, salary and postage June	101.00
Ira D. Shope, salary janitor	70.00
J. U. Rose, pictures	10.50
J. B. Maxfield, meat June and July	13.27
	$658.66

September 13, 1898.

Ira D. Shope, salary janitor	$ 70.00
Boulder Sentinel, stationery	6.50
F. C. Berendes, insurance furniture	25.00
Thomas Hall & Son, milk	2.85
Jas. Simpkins, fence posts and lumber	118.73
Sarah A. Tillinghast, salary matron	50.00
T. A. Wickes, supplies	21.30
Caird & Hawkesworth, dynamo pulley	3.20
Helena Power & Light Co., electrician and expenses	11.80
Boulder Drug Co., supplies	13.25
Thos. Hall, milk and berries	8.67
S. H. Knowles, butter and eggs	6.20
Sunn Lee, vegetables	6.65
E. Thomas & Co., supplies	13.05
Educational Publishing Co., supplies	10.72
Gaffney Mercantile Co., supplies	44.59
E. S. Tillinghast, salary superintendent and freight	110.50
John F. Sheehy, salary trustee four meetings	20.00
Wm. V. Myers, salary trustee four meetings	20.00
E. R. McNeill, salary trustee and secretary	50.00
	$613.01

October 11, 1898.

Gaffney Mercantile Co., supplies	$167.92
Ton Gow, supplies	5.00
Boulder Drug Co., supplies and gasoline	30.07
Marie Keller, salary girls' supervisor	25.00
Lena Wegener, cook	35.00
E. S. Tillinghast, salary superintendent and advances	107.15
L. A. Divine, salary teacher	100.00
Horace Taylor, contract fence	84.00
B. E. Barteau, repairs	3.25

Jas. Simpkins, fencing lumber and wire	212.56
Sarah A. Tillinghast, salary matron	50.00
Daisy Doyle, salary teacher	55.00
Weinstein & Co., supplies	9.20
E. Thomas & Co., supplies	107.91
Ira D. Shope, salary janitor & railroad fare	76.60
Hop Lee, laundry	25.00
J. B. Maxfield, meat	29.99
T. A. Wickes, dry goods	32.10
	$1,155.75

November 11, 1898.

Kessler Brick & Sewer Tile Co., Supplies	$ 91.50
E. S. Tillinghast, salary superintendent and advances	106.10
A. M. Holter Hardware Co., supplies	82.87
Thos. Hall & Son, milk and potatoes	18.67
A. M. Holter Hardware Co., carpenter tools	96.70
Ira D. Shope, janitor	70.00
Sarah A. Tillinghast, salary matron	50.00
Gaffney Mercantile Co., coal	96.50
Gaffney Mercantile Co., supplies	60.02
Hop Lee, laundry	25.00
Boulder Drug Co., gasoline	63.08
Lena Wegner, cook	24.50
Marie Keller, salary girls' supervisor	12.50
Daisy Doyle, salary teacher	55.00
Dan M. Halford, typewriting	5.00
C. W. Sweet, fruit	8.50
L. A. Divine, salary teacher	100.00
E. Thomas & Co., supplies	47.10
	$1,013.04

November 28, 1898.

T. A. Wickes, dry goods	$ 21.35
Chas. Scharf, stenographer	9.00
Lena Wegner, cook	35.00
J. B. Maxfield, meat October and November	66.11
Maria Keller, salary	30.00
Boulder Drug Co., gasoline, etc	64.34
Thos. Hall & Son, milk and potatoes	35.70
Sarah A. Tillinghast, salary matron	50.00
Gaffney Mercantile Co., furniture, coal and supplies	169.96
E. S. Tillinghast, salary superintendent and advances	104.05
C. L. Thompson, team hire	39.00
Thos. Hall & Son, milk, etc., November	34.25
E. Thomas & Co. supplies	50.52
Daisy Doyle, salary teacher	55.00

Sunn Lee, vegetables	12.15
Haggerty Bros., supplies	51.93
M. P. Ten Eycke, labor	5.00
Hop Lee, laundry	12.50
L. A. Divine, salary teacher	100.00
Ira D. Shope, salary janitor	70.00
Jas. Simpkins, labor and supplies	14.20
Wm. V. Myers, salary trustee seven meetings	35.00
E. R. McNeill, salary trustee and secretary	56.00
John F. Sheehy, salary trustee seven meetings	35.00
A. M. Holter Hardware Co., roofing	2.80
John Merrigan, root house as per contract and extras	430.75
	$1,589.61

Helena, Montana, December 6, 1898.

To the State Board of Education:

Gentlemen:—We, your Auditing Committee, have the honor to report that we have examined the statement of bills allowed by the local board of the State School for Deaf and Blind, and find the same correct.

M. J. GARRETT.
J. G. McKAY.

LIST OF PUPILS.

Name.	Age.	Postoffice.	County.	Cause of Defect.
Ira Cole	17	Park City	Yellowstone	Meningitis.
Robert Craze	12	Butte	Silver Bow	Congenital.
Annie Conture	19	Anaconda	Deer Lodge	Meningitis.
Ada Cook	19	Decker	Custer	Sore throat.
Louisa Fischer	17	Anaconda	Deer Lodge	Spin. Men.
Lena Flesher	17	Helena	Lewis and Clarke	Spin. Men.
R. L. Goodman	14	Armington	Cascade	Congenital.
Ed'h M. Harlan	14	Como	Ravalli	Meningitis.
Wm. Jones	16	Miles City	Custer	Scarlet fever.
H. Kranbeck	12	Butte	Silver Bow	Congenital.
D. H. Krause	11	Pondera	Choteau	Bad cold.
John Lay	25	Salesville	Gallatin	Meningitis.
Ethel M. Leibel	17	Hamilton	Ravalli	Congenital.
O. J. M'Brearty	9	Fort Benton	Choteau	Congenital.
Filmore Mallett	14	Chinook	Choteau	Brain fever.
Geo. Morrison	15	Toston	Broadwater	Congenital.
John Munnch	14	East Helena	Lewis and Clarke	Congenital.
John Schelska	14	East Helena	Lewis and Clarke	Fever.
A. Torgensen	10	Gardiner	Park	Scarlet fever.
L. Teegarden	10	Cascade	Cascade	Congenital.
Fanny Welcher	12	Sheridan	Madison	Congenital.
Mary Brickley	10	Quartz	Missoula	Congenital.
F. Brickley	13	Quartz	Missoula	Scarlet fever.
John Thomas	14	Sand Coulee	Cascade	Congenital.
James Conway	14	Butte	Silver Bow	Scarlet fever.
Anna Benedick	10	Parrot	Madison	Measles.
*Ethel Dillon	15	Butte	Silver Bow	Scarlet fever.
*Geo. Forsythe	15	Belt	Cascade	Spin. Men.
*Mosie Frank	18	Livingston	Park	Diseased eyes.
*Dolly Hall	21	Jefferson	Jefferson	Water on brain.
*J. McNamara	21	Butte	Silver Bow	Powder explosion.
*Blaine Hurst	17	Pony	Madison	Hit by B. B. bat.

*Blind.

Helena, Montana, December 6, 1898.

Honorable State Board of Education.

Gentlemen:—We, your committee on School for Deaf and Blind beg leave to submit the following report:

Having visited the institution during the past year and given a thorough examination of the work, we are pleased to report that the instruction has been of the highest order, and the management has been conservative and careful.

We have thoroughly examined the report of the Superintendent, and fully concur in his recommendation that the fourth story of the building be completed as soon as possible.

We further recommend that if possible some arable land contiguous to the present grounds be procured, and a suitable building erected for the care of the feeble-minded. If this is not possible, all legislation providing for the care of the feeble-minded in this institution should be repealed, it being evident that it is impossible to care for the two classes in one institution without injury to both.

In regard to estimates of expenses for the next two years, we see no particular in which we can recommend any important reduction, and would therefore recommend that something near the amount estimated ($24,530) should be appropriated for the next two years.

Respectfully submitted,

M. J. GARRETT.
C. B. NOLAN.

REPORT OF

Montana State School of Mines

Chairman Commissioners Report.

Anaconda, Montana, December 30, 1898.

Mr. E. A. Carleton, Secretary State Board of Education, Helena, Mont.:

Dear Sir:—The commissioners of the Montana State School of Mines, who have had the erection of the building in charge, have the honor to report that the work of construction has gone on steadily during the year just closing, and as rapidly as circumstances would permit. Although the building is still in the hands of the contractor, the final payment not yet having been made, it is practically completed, and if funds were available for its equipment and maintenance the school could be opened at once. But unfortunately for this greatly desired consummation, there is but little money in the treasury, and not much more in sight. The only property the school possesses from which revenue can be derived is its proportion of the school lands of the state, and the lowest price at which the government will permit these lands to be sold, namely, at $10 per acre, is so much above their present value that they cannot be sold. Neither do they seem to be desirable for leasing, and the result is that up to date the revenues of the school amount to little or nothing.

The building will cost when completed between $90,000 and $100,000, and the interest on the warrants issued to cover the cost of construction will have to be provided for. The building should be furnished throughout with suitable, substantial furniture; the assaying department should be fitted up with all the necessary chemical apparatus and a faculty of experienced men employed to open and run the school. It is true that one or two rooms only might be furnished at first and one or two teachers only be employed, thus making the cost of equipment and maintenance much cheaper, but in the opinion of the commissioners it would be a mistake to open the school in a cheap, half-hearted way, and if the revenues of the state will not permit an appropriation to be made large enough to equip and maintain the school in a manner commensurate with its importance as an educational institution that is destined to have great influence on the future mineral and industrial development of the state. then it better not be opened now at all.

While it is believed that in time the revenues from the sale and lease of the lands allotted to the school will be amply sufficient to maintain it handsomely, at present it is entirely dependent upon the bounty of the legislature. The small amounts appropriated by the last legislature for the maintenance of the school in 1897 and 1898 were not used, so that up to date the school has been no tax upon the revenues of the state whatever.

Mining of the precious and useful metals and minerals, as is well known, is the most important industry in the state, and an institution devoted to the study of mining and kindred subjects merits favorable consideration and generous support. The site of the building is on a commanding eminence about one mile west of Main street, Butte, and the building itself is a handsome and imposing structure. Skillfully designed, honestly constructed and admirably adapted for the uses intended, it is an ornament to Butte and a credit to the state.

When the school shall be properly opened it is confidently anticipated that it will spring at once into popular favor, enhance materially the educational advantages of the state, and add one more to the many attractions that Montana offers to intelligent, industrious and worthy people seeking homes.

Yours truly,

F. E. SARGEANT,
Chairman Commissioners State School of Mines.